February 28, 2005

Mr. Yue Rong
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, California 90013

Subject: **WORK PLAN FOR SITE ASSESSMENT ACTIVITIES AT EXXONMOBIL OIL CORPORATION FORMER SERVICE STATION #18-M1A 4770 EAST SEVENTH STREET, LONG BEACH, CALIFORNIA (CRWQCB-LAR ID# NOT ASSIGNED)**

Dear Mr. Rong:

Holguin, Fahan & Associates, Inc. (HFA) is pleased to present the following work plan outlining the proposed methodology for performing a site assessment to investigate the extent of dissolved-phase and adsorbed-phase hydrocarbons at the above-referenced site. Due to nonresponse from the CRWQCB-LAR with respect to a site assessment report dated January 2, 2004, this work plan has been prepared to continue the necessary site assessment in accordance with the 60-day policy (HFA, 2004a). A list of acronyms used in this work plan is enclosed.

BACKGROUND

SITE LOCATION AND CONTACT PERSONS

ExxonMobil Oil Corporation (ExxonMobil) Former Service Station #18-M1A is located at 4770 East Seventh Street, on the southwestern corner of the intersection of Park Avenue and East Seventh Street, in the city of Long Beach, California (see Figure 1 - Site Location Map). The surrounding areas consist of residential and light commercial properties, with a high school located across the street to the north (see Figure 2 - Site Vicinity Map).

The responsible party contact is Ms. Jenee Briggs, ExxonMobil Oil Corporation, 3700 West 190th Street, TPT2, Torrance, California 90504, (310) 212-2904. The environmental consultant contact is Mr. James Anderson, Holguin, Fahan & Associates, Inc., 143 South Figueroa Street, Ventura, California, 93001, (805) 585-6371. The regulatory agency contact is Mr. Yue Rong, California Regional Water Quality Control Board, Los Angeles Region, 320 West 4th Street, Suite 200, Los Angeles, California, 90013, (213) 576-6700.

ENVIRONMENTAL: SCIENTISTS • GEOLOGISTS • ENGINEERS
Contaminated Site Assessment • Site Remediation • Mobile Remediation • CPT Service • Groundwater Monitoring

143 South Figueroa Street
Ventura, California 93001
(805) 652-0219
(805) 652-0793 FAX
Mark_Fahan@hfa.com

948 North Lemon Street
Orange, California 92867
(714) 210-5971
(714) 210-5975 FAX
Steve_Edelman@hfa.com

948 North Lemon Street
Orange, California 92867
(714) 210-5971
(714) 210-5975 FAX
Amanda_Hancock@hfa.com

1003 East Cooley Drive, Suite 201
Colton, California 92324
(909) 422-8988
(909) 422-8099 FAX
Steve_Edelman@hfa.com

1215 South Park Lane, Suite 1
Tempe, Arizona 85281
(866) 505-3332 • (480) 505-3332
(480) 505-3336 FAX
Martin_Minter@hfa.com

www.hfa.com

SITE DESCRIPTION

The subject site was divested by ExxonMobil in January 2004, and is currently a former Mobil brand gasoline service station. The USTs and product piping were removed, and an abandoned service station building, dispenser islands, and canopies remain. The site is scheduled to be redeveloped with a light commercial building and parking lot in 2005 (see Figure 3 - Proposed Groundwater Monitoring Well Locations for the former facilities).

GEOLOGY AND HYDROGEOLOGY

The site is located at an elevation of 18 feet above MSL, and the local topography slopes toward the southwest (USGS, 1964). The site is located in the eastern portion of the Long Beach Plain on the southeastern flank of the Signal Hills, 1 mile northeast of the Pacific Ocean. The site is in the Newport-Inglewood structural zone, and the Reservoir Hills Fault is located 0.6 mile to the northeast (CDWR, 1961). Surface waters in the site vicinity drain as part of the watershed of the Lower Los Angeles River, which is located 3.5 miles to the west. The nearest body of surface water is the Colorado Lagoon, 1,000 feet southeast of the site (USGS, 1964).

Near surface soil in the site vicinity consists of Pleistocene sediments of the Lakewood Formation (CDWR, 1961). Assessment activities indicate that the Lakewood deposits consist of silty clay and clayey silt from the surface to 14 fbg, and silty sand and sand from 14 to 40 fbg, the maximum depth investigated (HFA, 2004a; and Kleinfelder, Inc. [Kleinfelder], 1992).

The site is located in the West Coast Groundwater Basin of the Los Angeles-San Gabriel Hydrologic Unit (CRWQCB-LAR, 1994). The aquifers in this portion of the basin have not been differentiated (CDWR, 1961). Results of historical quarterly monitoring indicate the depth to first groundwater has been relatively constant at 14.5 to 16.5 fbg and the groundwater flow direction has been highly variable, with a general trend toward the south (TRAK Environmental Group [TRAK], 1996).

According to the CRWQCB-LAR, groundwater within the basin has existing beneficial use for municipal, industrial, and agricultural purposes (CRWQCB-LAR, 1994). Based upon information provided by the LACDPW Hydrologic Records Section, no groundwater production wells were identified within 1 mile of the site. The nearest wells are two inactive groundwater observation wells (LACDPW #472A and 473) located 0.9 mile southeast of the site (LACDPW, 2003).

TANK HISTORY

In 1987, the gasoline and used-oil USTs were removed and new USTs were installed in the same approximate tank cavities (see Figure 3). An estimated 350 cubic yards of hydrocarbon-containing soil was excavated from the former gasoline UST cavity, and 30 cubic

yards was removed from the used-oil UST cavity (Alton Geoscience, Inc., 1988).

In January 2004, the service station was abandoned, which included the removal of three gasoline USTs, one used-oil UST, and associated product piping (see Figure 3) (HFA, 2004b).

PREVIOUS WORK

From 1988 to 1992, fifteen groundwater monitoring wells (MW-1 through MW-15) were installed on-site and in the adjacent public right of way. Results of the assessment activities indicated that only trace adsorbed-phase hydrocarbon concentrations were detected, and were localized around the former gasoline USTs (see Figure 3) (Kleinfelder, 1992).

Groundwater monitoring was conducted from 1988 to 1996. PSH was periodically measured in the well (MW-1) located directly west of the former USTs, and hand-bailing recovered an unknown quantity of PSH (Kleinfelder, 1992). Dissolved-phase benzene concentrations were localized on-site to the vicinity of the former western dispensers and USTs and remained relatively constant over the 8 years of monitoring. MTBE was only analyzed during the final monitoring event, and dissolved-phase MTBE concentrations were localized to the area directly south of the former USTs (TRAK, 1996).

The site was granted closure by the CRWQCB-LAR in November 1996, and all wells were abandoned.

In November 2003, a baseline assessment was conducted prior to divestment of the station. Results of the assessment indicated TPH as gasoline, benzene, and MTBE concentrations up to 370, 0.12J, and 0.93 mg/kg, respectively. The maximum adsorbed-phase concentrations were measured in the soil samples collected from the capillary fringe for the locations adjacent to the former western dispenser island and USTs. Dissolved-phase TPH as gasoline, benzene, MTBE, and TBA were measured at concentrations up to 110,000; 12,000; 43,000; and 14,000 μg/l, respectively. The maximum dissolved-phase MTBE was measured for the locations adjacent to the former USTs, and the highest benzene was measured for the locations adjacent to the former USTs and western dispenser islands (see Figure 4 - Adsorbed-Phase Hydrocarbon Concentrations for Direct-Push Locations, Figure 5 - Dissolved-Phase Hydrocarbon Concentrations for Direct-Push Locations, and Table 1 - Summary of Groundwater Sample Analytical Results) (HFA, 2004a).

In January 2004, the service station was abandoned. Laboratory analytical results for the soil samples collected from beneath the former dispensers and product piping indicated TPH as gasoline, benzene, and MTBE concentrations up to 0.13J, 0.00053, and 0.091J mg/kg,

respectively. Laboratory analytical results for the soil sample collected from beneath the former used-oil UST indicated no detections of TRPH and benzene. Based upon the results of the compliance soil sampling, a secondary excavation was conducted beneath the northeastern half of the former gasoline UST cavity to 16 fbg (the capillary fringe). This excavation removed a total of 126.04 tons (estimated 85 cubic yards) of soil. Laboratory analytical results for the in-place verification soil samples collected from the bottom and sidewalls of the former UST cavity indicated TPH as gasoline, benzene, and MTBE concentrations up to 4,200; 24; and 17 mg/kg, respectively (see Figure 6 - Adsorbed-Phase Hydrocarbon Concentrations for Excavation Verification Samples, and Table 2 - Summary of Tank Pull Soil Sample Analytical Results) (HFA, 2004b).

PROPOSED WORK

RATIONALE FOR PROPOSED WORK

Due to the detection of dissolved-phase hydrocarbons during the baseline assessment, installation of monitoring wells to investigate the extent of adsorbed-phase and dissolved-phase hydrocarbons and implementation of a quarterly groundwater monitoring program is warranted.

DESCRIPTION OF ALL WORK TO BE PERFORMED

Prior to performing any subsurface work, HFA, in compliance with the ExxonMobil ground disturbance protocol, will:

- review the site as-built drawing;
- perform a pre-drilling site visit to investigate and mark all proposed drilling locations and gather site-specific product systems data;
- order a utility markout from Underground Service Alert of Southern California and a private geophysical company markout; and
- clear all drilling locations of subsurface lines using hand or vacuum digging techniques to a diameter larger than the hollow-stem augers and 8 feet in depth.

Soil Assessment

To further investigate the extent of adsorbed-phase and dissolved-phase hydrocarbons, HFA proposes to install five groundwater monitoring wells to 35 fbg using hollow-stem auger

techniques (see Figure 3 for the proposed locations, and Attachment 1 for the procedures). One monitoring well will be installed in the source area directly south of the former USTs to further investigate the extent of adsorbed-phase hydrocarbons measured in excavation verification samples EX-S-2 and EX-B-4 (see Figure 6). To monitor the extent of dissolved-phase hydrocarbons to the northwest and southwest of the former USTs, two wells will be installed along the eastern boundary of the proposed commercial building. To delineate the southern extent of dissolved-phase hydrocarbons, one well will be installed in the southeastern portion of the site. To investigate the on-site extent of adsorbed-phase and dissolved-phase hydrocarbons to the north of the former USTs, one well will be installed in the northeastern portion of the site.

Soil samples will be collected for geologic logging purposes at 5-foot intervals to the total depth of the drilling locations. One of the locations will be continuously cored to its total depth to provide detailed lithographic information. Selected soil samples will be submitted to a California State certified testing facility, where they will be analyzed for TPH as gasoline using EPA Method 8015B (M), and for BTEX, MTBE, TBA, TAME, DIPE, ETBE, and ethanol using EPA Method 8260B. The soil samples submitted to the laboratory will be collected and analyzed in accordance with EPA Method 5035.

Groundwater Assessment

The groundwater monitoring wells will be completed with 4-inch-OD PVC casing screened from 20 feet below to 10 feet above the groundwater table, approximately 5 to 35 fbg (see Attachment 1, and Attachment 2 for the proposed groundwater monitoring well construction details). The monitoring wells will be properly developed and surveyed in accordance with the requirements of AB2886.

All groundwater monitoring wells will be purged and sampled in accordance with CRWQCB-LAR requirements, and a quarterly groundwater monitoring and sampling program will be initiated (see Attachment 3 for the procedures). The groundwater samples will be submitted to a California State certified testing facility, where they will be analyzed for TPH as gasoline using EPA Method 8015B (M), and for BTEX, MTBE, TBA, TAME, DIPE, ETBE, and ethanol using EPA Method 8260B.

EQUIPMENT DECONTAMINATION PROCEDURES

Sampling equipment will be decontaminated using a nonphosphate soap and water wash, and two tap-water rinses. The hollow-stem augers will be decontaminated using a steam cleaner between drilling locations.

WASTE MANAGEMENT PROCEDURES

All soil cuttings and decontamination/purge water will be placed in 55-gallon, DOT-approved drums. Upon receipt of laboratory analytical results, the wastes will be transported to licensed recycling facilities.

WORK SCHEDULE

Work will begin within 4 weeks of acceptance of this work plan by the CRWQCB-LAR. The CRWQCB-LAR will be notified at least 72 hours prior to performing field activities. A site assessment report will be submitted to the CRWQCB-LAR approximately 8 weeks after completion of the work.

SITE SAFETY PLAN

A worker health and safety plan developed by HFA's industrial hygienist for UST site investigations is included as Attachment 4. Procedures for conducting all work are outlined in this plan, and site-specific information is provided on the cover page and job safety analysis.

All work will be conducted under the supervision of a registered geologist or civil engineer, and will be accomplished in accordance with all regulatory requirements as defined by the SWRCB LUFT field manual.

Holguin, Fahan & Associates, Inc. trusts that this work plan meets your requirements. If you have any questions or require additional information, please contact Mr. James Anderson at (805) 585-6371 or James_Anderson@hfa.com.

Respectfully submitted,

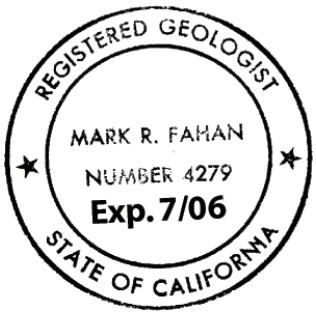
James Anderson, REA
Associate Engineer
Holguin, Fahan & Associates, Inc.

Mark R. Fahan, RG, REA
Vice President
Holguin, Fahan & Associates, Inc.

JDA:mrf:jpk

Enclosures:
- Figure 1 - Site Location Map
- Figure 2 - Site Vicinity Map
- Figure 3 - Proposed Groundwater Monitoring Well Locations
- Figure 4 - Adsorbed-Phase Hydrocarbon Concentrations for Direct-Push Locations
- Figure 5 - Dissolved-Phase Hydrocarbon Concentrations for Direct-Push Locations
- Figure 6 - Adsorbed-Phase Hydrocarbon Concentrations for Excavation Verification Samples
- Table 1 - Summary of Groundwater Sample Analytical Results
- Table 2 - Summary of Tank Pull Soil Sample Analytical Results
- List of Acronyms
- Attachment 1 - Soil Boring, Direct-Push Sampling, and Well Construction Procedures
- Attachment 2 - Proposed Groundwater Monitoring Well Construction Details
- Attachment 3 - Groundwater Monitoring, Sampling, and Sample Management Procedures
- Attachment 4 - Worker Health and Safety Plan

cc: Ms. Jeneé Briggs, ExxonMobil
Ms. Rhonda Schrock, ExxonMobil



REFERENCES

Alton Geoscience, Inc., 1988, Transmittal of Report of Site Characterization Studies and Field Activities for Mobil Station 11-M1A, March 2, 1988.

California Department of Water Resources, 1961, Bulletin No. 104 Planned Utilization of the Groundwater Basins of the Coastal Plain of Los Angeles County, Appendix A, Groundwater Geology, Reprinted April 1998.

California Regional Water Quality Control Board, Los Angeles Region (4), 1994, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, June 13, 1994.

Holguin, Fahan & Associates, Inc., 2004a, FAX 101 Assessment Report for ExxonMobil Oil Corporation Service Station #18-M1A, January 2, 2004.

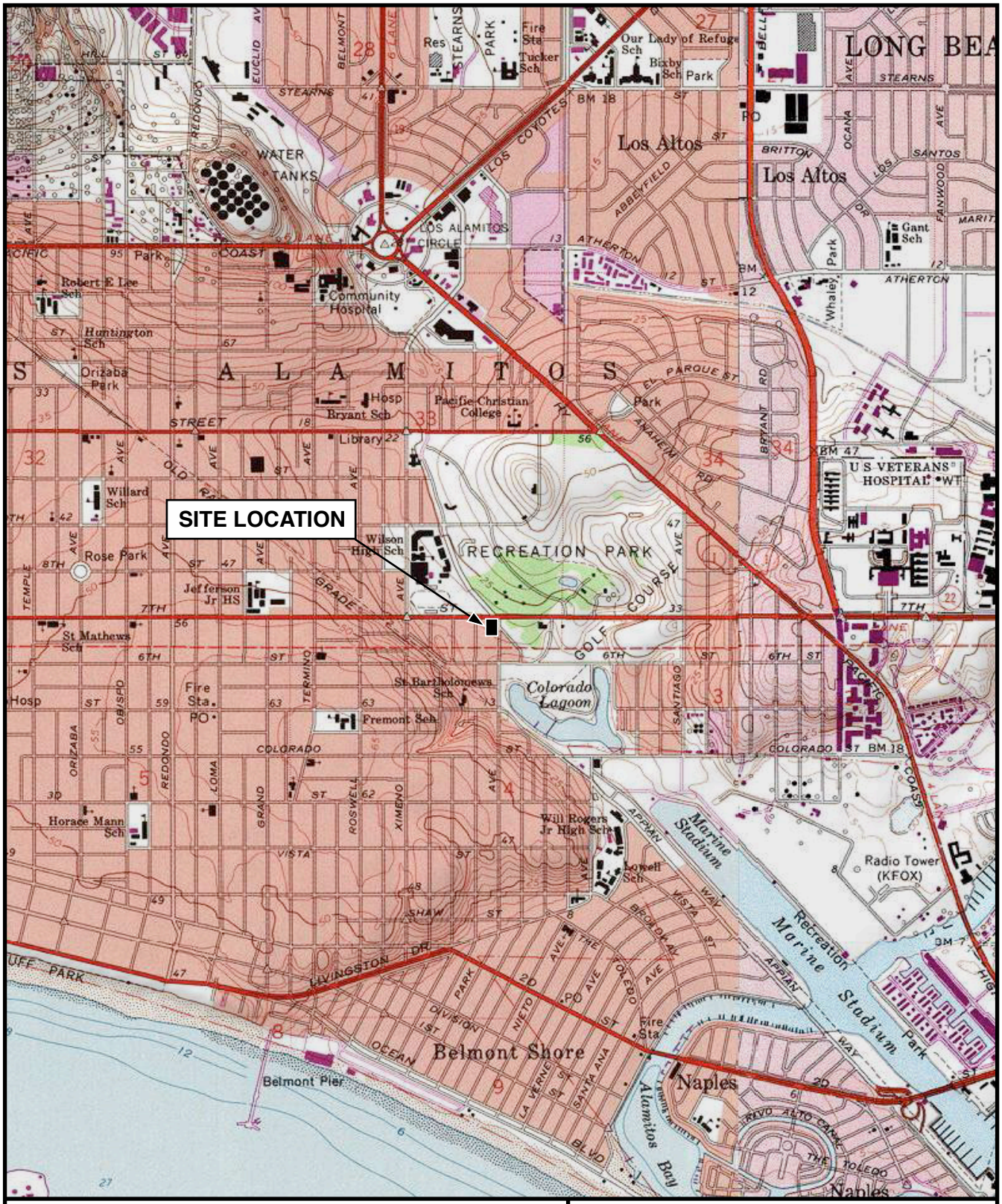
Holguin, Fahan & Associates, Inc., 2004b, Soils Report to Tank Excavation Assessment Report for ExxonMobil Oil Corporation Service Station #18-M1A, March 17, 2004.

Kleinfelder, Inc., 1992, Report Subsurface Soil and Groundwater Assessment, Mobil Station 11-M1A, September 1992.

Los Angeles County Department of Public Works Hydrologic Records Section, 2003, Information Request Transmittal, December 18, 2003.

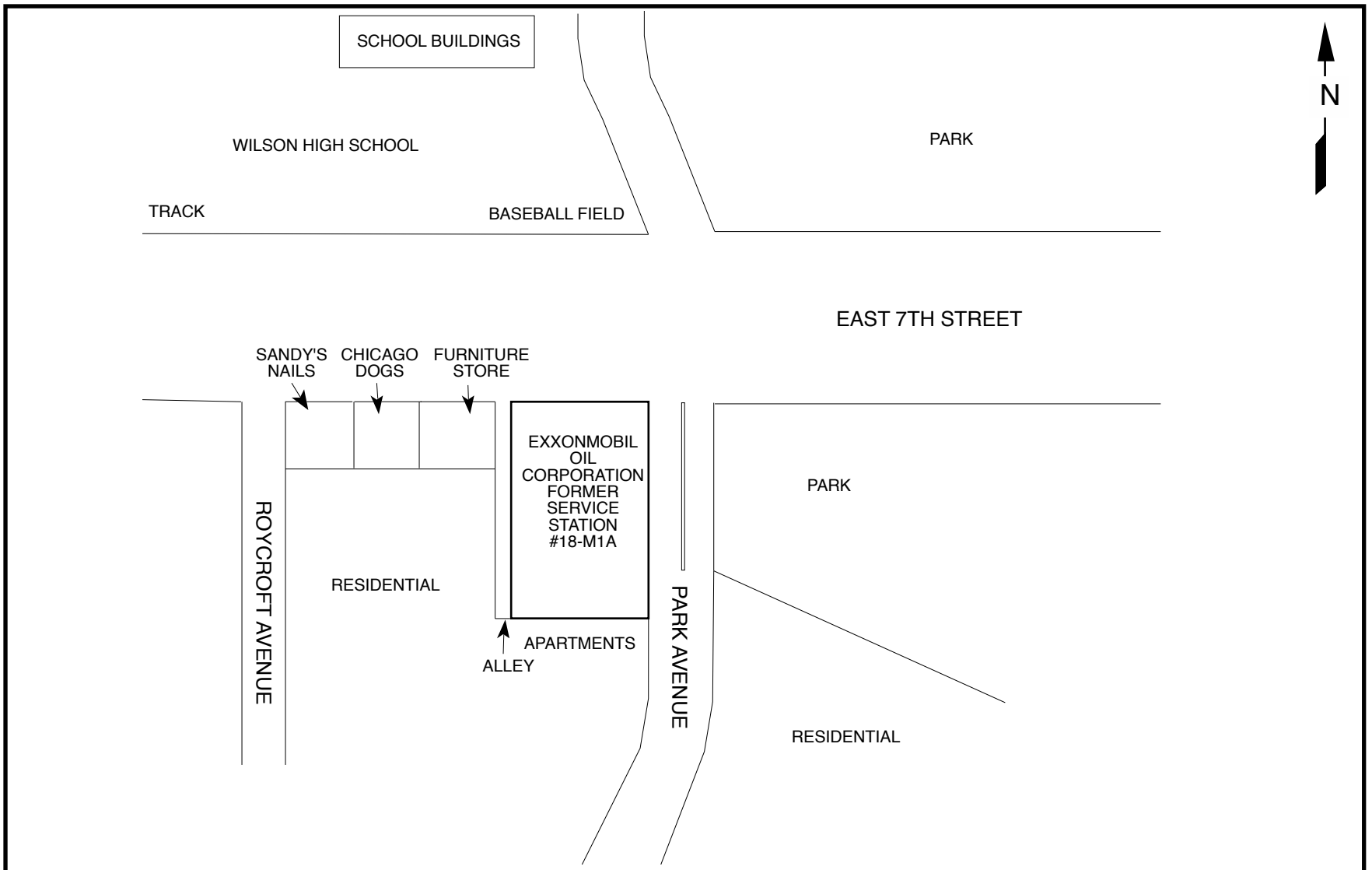
TRAK Environmental Group, 1996, Semi-Annual Progress Report for Mobil Service Station 11-M1A, August 6, 1996.

United States Geological Survey, 1964, Long Beach Quadrangle 7.5-Minute Series (Topographic), Photorevised 1981.

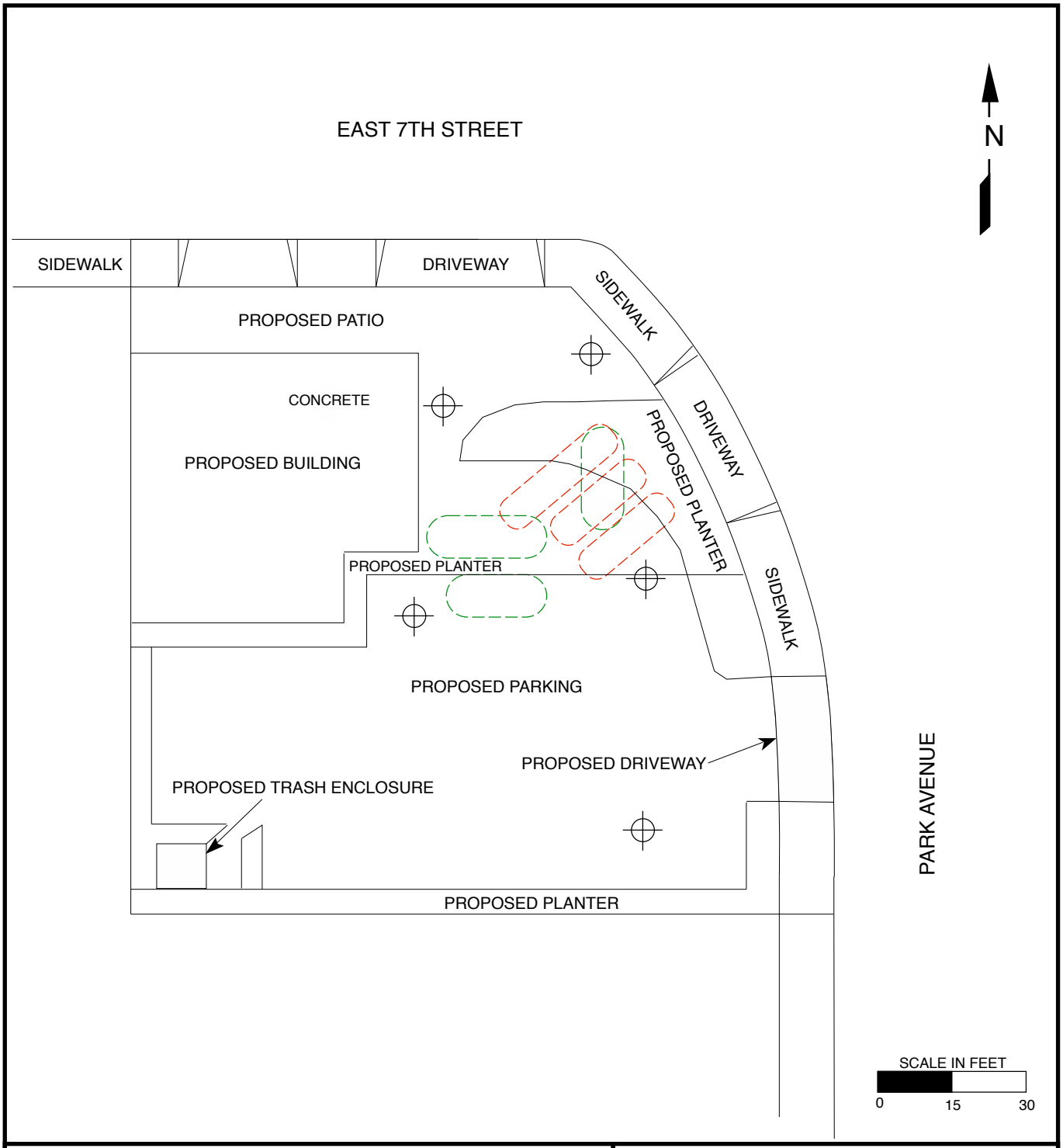


LEGEND	EXXONMOBIL OIL CORPORATION
0 0.5 1 MILE 0 1,000 2,000 3,000 4,000 5,000 FEET 0 0.5 1 KILOMETER N BASE MAP FROM TOPO! ©2000 NATIONAL GEOGRAPHIC HOLDINGS	FORMER SERVICE STATION #18-M1A 4770 EAST SEVENTH STREET LONG BEACH, CALIFORNIA FIGURE 1 - SITE LOCATION MAP
	HOLGUIN, FAHAN & ASSOCIATES, INC.

REVISION DATE: JANUARY 6, 2005: JPK

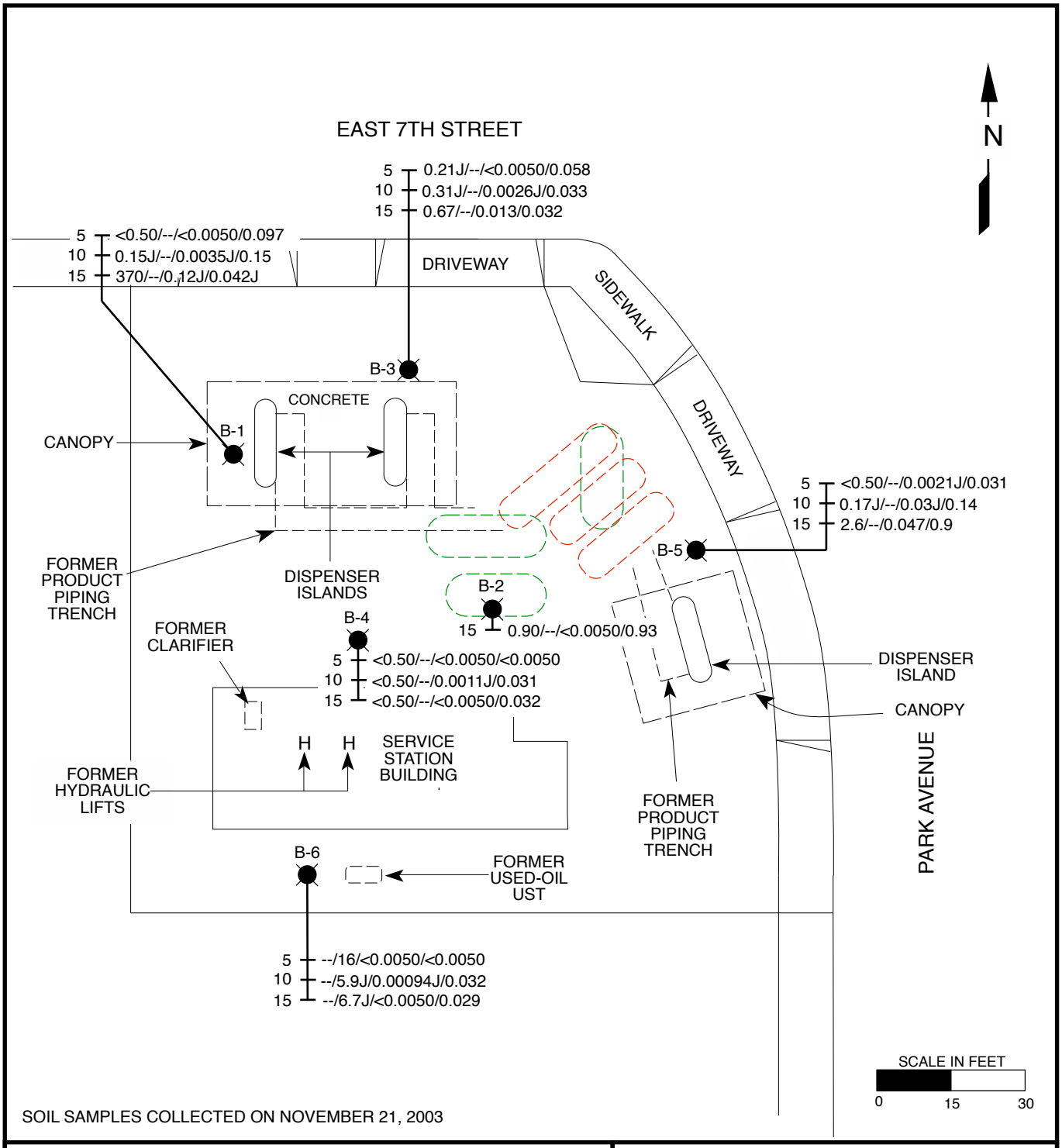


LEGEND	EXXONMOBIL OIL CORPORATION
SCALE IN FEET 0 50 100	FORMER SERVICE STATION #18-M1A 4770 EAST SEVENTH STREET LONG BEACH, CALIFORNIA FIGURE 2 - SITE VICINITY MAP
	HOLGUIN, FAHAN & ASSOCIATES, INC.



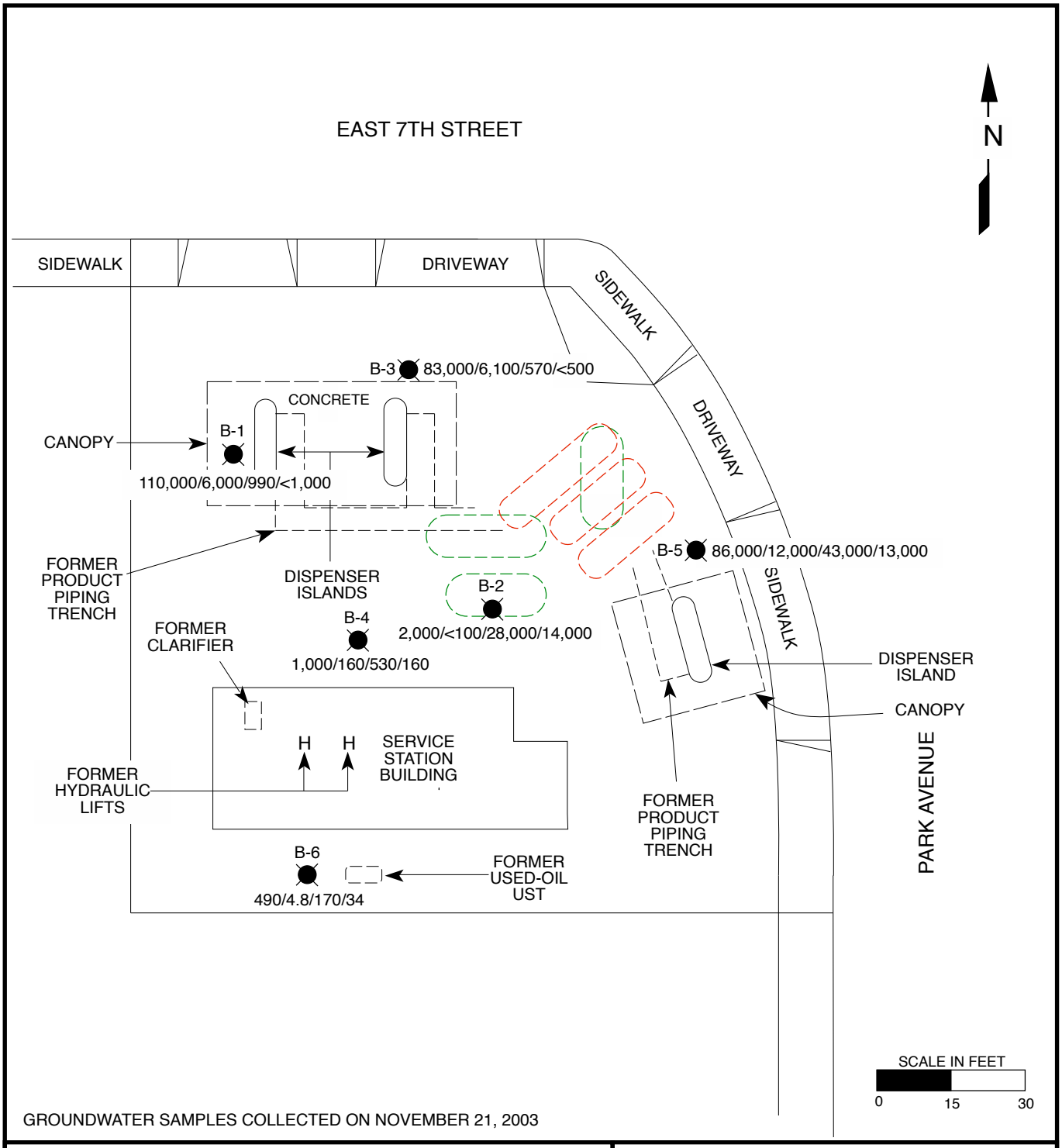
LEGEND	EXXONMOBIL OIL CORPORATION
PROPOSED MONITORING WELL FIRST GENERATION FORMER UST SECOND GENERATION FORMER UST	FORMER SERVICE STATION #18-M1A 4770 EAST SEVENTH STREET LONG BEACH, CALIFORNIA FIGURE 3 - PROPOSED GROUNDWATER MONITORING WELL LOCATIONS **HOLGUIN, FAHAN & ASSOCIATES, INC.**

REVISION DATE: JANUARY 10, 2005: JPK



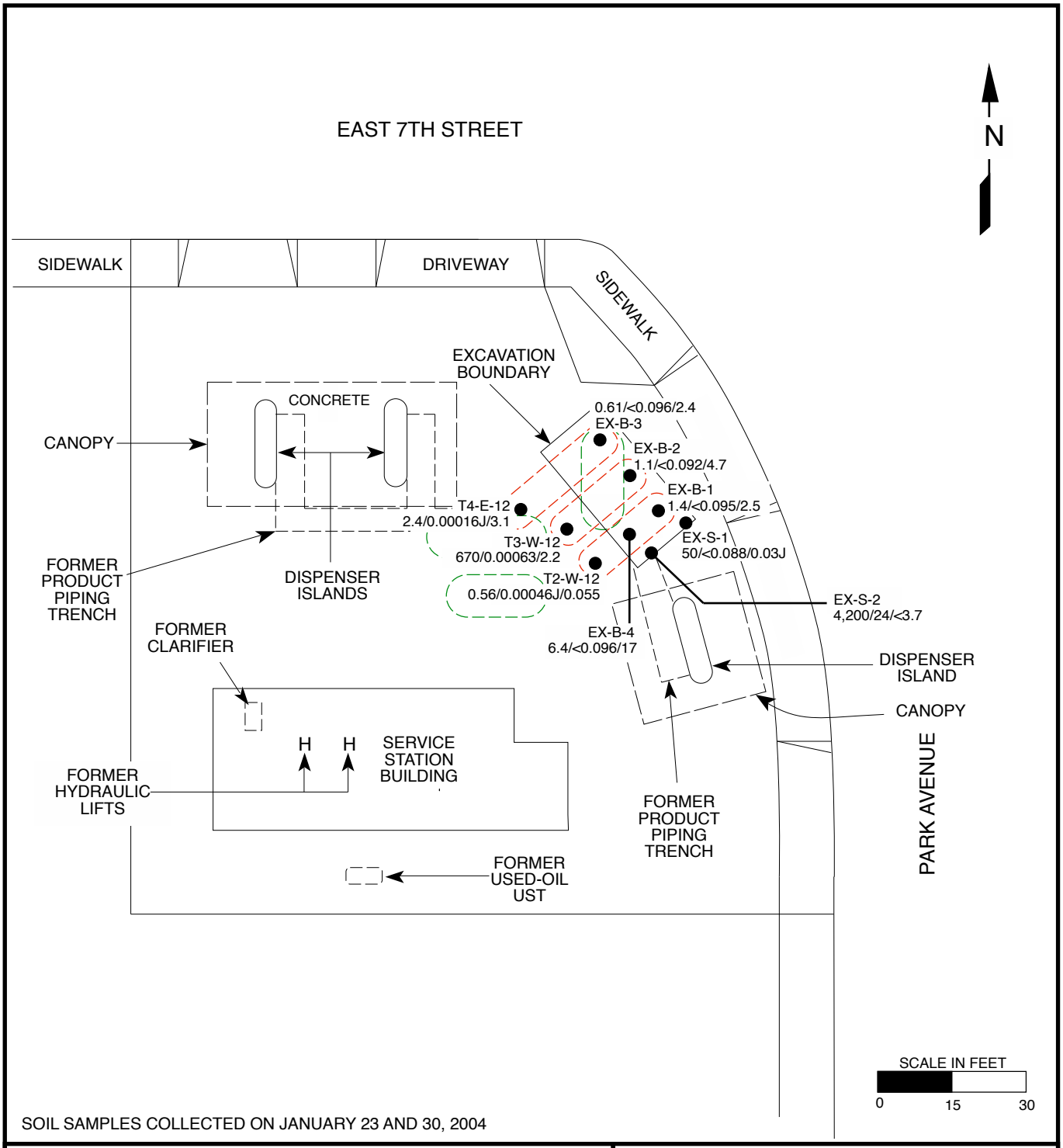
LEGEND	EXXONMOBIL OIL CORPORATION
DIRECT-PUSH SAMPLING LOCATION #/#/#/# TPH AS GASOLINE/TRPH/BENZENE/MTBE CONCENTRATIONS IN SOIL (mg/kg) FIRST GENERATION FORMER UST # DEPTH OF SOIL SAMPLE (fbg) SECOND GENERATION FORMER UST -- NOT ANALYZED	FORMER SERVICE STATION #18-M1A 4770 EAST SEVENTH STREET LONG BEACH, CALIFORNIA FIGURE 4 - ADSORBED-PHASE HYDROCARBON CONCENTRATIONS FOR DIRECT-PUSH LOCATIONS **HOLGUIN, FAHAN & ASSOCIATES, INC.**

REVISION DATE: JANUARY 10, 2005: JPK



LEGEND	EXXONMOBIL OIL CORPORATION
DIRECT-PUSH SAMPLING LOCATION #/#/#/# TPH AS GASOLINE/BENZENE/ MTBE/TBA CONCENTRATIONS IN GROUNDWATER (µg/l) FIRST GENERATION FORMER UST SECOND GENERATION FORMER UST	FORMER SERVICE STATION #18-M1A 4770 EAST SEVENTH STREET LONG BEACH, CALIFORNIA FIGURE 5 - DISSOLVED-PHASE HYDROCARBON CONCENTRATIONS FOR DIRECT-PUSH LOCATIONS **HOLGUIN, FAHAN & ASSOCIATES, INC.**

REVISION DATE: JANUARY 10, 2005: JPK



SOIL SAMPLES COLLECTED ON JANUARY 23 AND 30, 2004

LEGEND	EXXONMOBIL OIL CORPORATION
● SOIL SAMPLE LOCATION #/#/# TPH AS GASOLINE/BENZENE/ MTBE CONCENTRATIONS IN SOIL (mg/kg) FIRST GENERATION FORMER UST SECOND GENERATION FORMER UST	FORMER SERVICE STATION #18-M1A 4770 EAST SEVENTH STREET LONG BEACH, CALIFORNIA FIGURE 6 - ADSORBED-PHASE HYDROCARBON CONCENTRATIONS FOR EXCAVATION VERIFICATION SAMPLES **HOLGUIN, FAHAN & ASSOCIATES, INC.**

REVISION DATE: JANUARY 10, 2005: JPK

TABLE 1.
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS
EXXONMOBIL OIL CORPORATION FORMER SERVICE STATION #18-M1A, LONG BEACH, CALIFORNIA

SAMPLE SOURCE	DATE SAMPLED	SAMPLE ID	TPH AS GASOLINE (µg/l)	BENZENE (µg/l)	TOLUENE (µg/l)	ETHYL-BENZENE (µg/l)	TOTAL XYLENES (µg/l)	MTBE (µg/l)	TBA (µg/l)	DIPE (µg/l)	ETBE (µg/l)	TAME (µg/l)	ETHANOL (µg/l)	REF
EPA ANALYTICAL METHOD			DHS LUFT	8260B										N/A
B-1	11-21-03	B-1	110,000	6,000	15,000	3,300	19,100	990	<1,000	<200	<200	<200	<10,000	A
B-2	11-21-03	B-2	2,000	<100	<200	<200	<200	28,000	14,000	<400	<400	<400	<20,000	A
B-3	11-21-03	B-3	83,000	6,100	6,900	2,900	14,200	570	<500	<100	<100	<100	<5,000	A
B-4	11-21-03	B-4	1,000	160	2.4	7.6	12.2	530	160	<4.0	<4.0	<4.0	<200	A
B-5	11-21-03	B-5	86,000	12,000	10,000	4,000	16,000	43,000	13,000	<2.0	1.9J	22	<100	A
B-6	11-21-03	B-6	490	4.8	20	12	81	170	34	<2.0	<2.0	<2.0	<100	A

<# = less than reporting limit.

A = Holguin, Fahan & Associates, Inc.'s report dated January 2, 2004.

TABLE 2.
SUMMARY OF TANK PULL SOIL SAMPLE ANALYTICAL RESULTS
EXXONMOBIL OIL CORPORATION FORMER SERVICE STATION #18-M1A, LONG BEACH, CALIFORNIA

SAMPLE SOURCE	DATE SAMPLED	DEPTH (fbg)	SAMPLE ID	TPH AS GASOLINE (mg/kg)	TRPH (mg/kg)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL-BENZENE (mg/kg)	TOTAL XYLENES (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)	ETHANOL (mg/kg)	REF
EPA ANALYTICAL METHOD				8015B	418.1 (M)	8260B										N/A
DISPENSER ISLANDS	1-23-04	5	D1-5	0.076J	--	<0.00073	0.00032J	<0.00073	0.00076J	0.0024	0.021	<0.00073	<0.00073	<0.00073	<0.37	A
	1-23-04	5	D2-5	0.13J	--	0.00012J	0.00025J	<0.00068	<0.00068	0.00024J	0.013J	<0.00068	<0.00068	<0.00068	<0.34	A
	1-23-04	5	D3-5	0.057J	--	<0.00062	0.00033J	<0.00062	0.00036J	0.00098J	0.011J	<0.00062	<0.00062	<0.00062	<0.31	A
	1-23-04	4	D4-4	<0.12	--	<0.051	<0.051	<0.051	0.014J	0.091J	<1	<0.051	<0.051	<0.051	<25	A
PRODUCT PIPING	1-23-04	3	PL-1-3	0.047J	-- --	0.00053	0.0010	<0.00047	0.00156J	0.026	0.064	<0.00047	<0.00047	<0.00047	<0.24	A
GASOLINE USTs	1-23-04	14	T2-E-12	11,000	--	16	410	230	2,030	<0.3	<3	<0.15	0.08J	0.058J	<76	A
	1-23-04	14	T2-W-12	0.56	--	0.00046J	0.0013	0.0027	0.0107	0.055	0.023	<0.00056	0.00016J	<0.00056	<0.28	A
	1-23-04	14	T3-E-12	3,000	--	0.77	83	76	640	<0.15	<1.5	<0.077	0.017J	<0.077	<39	A
	1-23-04	14	T3-W-12	670	--	0.00063	0.00072	0.11	0.05796	2.2	1.5	<0.00061	<0.00061	0.00045J	<0.3	A
	1-23-04	14	T4-W-12	3,000	--	0.092	0.57	26	108	0.31	<1.7	<0.084	<0.084	<0.084	<42	A
	1-23-04	14	T4-E-12	2.4	--	0.00016J	0.00028J	0.00053J	0.0028	3.1	11	<0.00056	<0.00056	0.0018	<0.28	A
USED-OIL UST	1-23-04	8	T1-8	--	<25	<0.0050	<0.0050	<0.0050	0.00096J	<0.0050	<0.05	<0.01	<0.01	<0.01	<0.25	A
HYDRAULIC LIFTS	1-23-04	7	HL-1-7	--	78	<0.0050	<0.0050	<0.0050	0.0013J	<0.0050	<0.05	<0.0050	<0.0050	<0.0050	<0.25	A
	1-23-04	7	HL-2-7	--	6.5J	<0.0050	<0.0050	<0.0050	0.0012J	<0.0050	<0.05	<0.0050	<0.0050	<0.0050	<0.25	A
STOCKPILE	1-23-04	--	SP-1	<0.50	--	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	--	--	--	--	--	A
	1-23-04	--	SP-2	<0.50	--	<0.0050	<0.0050	<0.0050	<0.0050	0.0025J	--	--	--	--	--	A
	1-23-04	--	SP-3	--	28	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	--	--	--	--	--	A
CLARIFIER	1-23-04	5	CL-1-5	--	5.1J	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.05	<0.0050	<0.0050	<0.0050	<0.25	A
SECONDARY EXCAVATION	1-30-04	16	EX-B-1	1.4	--	<0.095	<0.095	<0.095	0.046J	2.5	2	<0.095	<0.095	<0.095	<48	A
	1-30-04	16	EX-B-2	1.1	--	<0.092	<0.092	<0.092	0.041J	4.7	3.5	<0.092	<0.092	<0.092	<46	A
	1-30-04	16	EX-B-3	0.61	--	<0.096	<0.096	<0.096	0.04J	2.4	<1.9	<0.096	<0.096	<0.096	<48	A
	1-30-04	16	EX-B-4	6.4	--	<0.096	0.068J	<0.096	0.136J	17	16	<0.096	<0.096	<0.096	4.8J	A
	1-30-04	15	EX-S-2	4,200	--	24	580	240	2,540	<3.7	<37	<1.8	<1.8	<1.8	<920	A
	1-30-04	15	EX-S-1	50	--	<0.088	0.045J	0.089	0.73	0.03J	<1.8	<0.088	<0.088	<0.088	<44	A

-- = not analyzed. <# = less than reporting limit.
A = Holguin, Fahan & Associates, Inc.'s report dated March 17, 2004.

LIST OF ACRONYMS

AB2886	California State Assembly Bill 2886
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CDWR	California Department of Water Resources
CRWQCB-LAR	California Regional Water Quality Control Board, Los Angeles Region (4)
DHS	Department of Health Services
DIPE	diisopropyl ether
DOT	Department of Transportation
EPA	Environmental Protection Agency
ETBE	ethyl tertiary butyl ether
fbg	feet below grade
ID	identification
J	value between the method detection limit and the reporting limit
LACDPW	Los Angeles County Department of Public Works
LUFT	leaking underground fuel tank
mg/kg	milligrams per kilogram
MSL	mean sea level
MTBE	methyl tertiary butyl ether
N/A	not applicable
OD	outside diameter
PSH	phase-separated hydrocarbons
PVC	polyvinyl chloride
REF	report reference
SWRCB	State Water Resources Control Board
TAME	tertiary amyl methyl ether
TBA	tertiary butyl alcohol
TPH	total petroleum hydrocarbons
TRPH	total recoverable petroleum hydrocarbons
USGS	United States Geological Survey
UST	underground storage tank
µg/l	micrograms per liter

ATTACHMENT 1.

SOIL BORING, DIRECT-PUSH SAMPLING, AND WELL CONSTRUCTION PROCEDURES

SOIL BORING, DIRECT-PUSH SAMPLING, AND WELL CONSTRUCTION PROCEDURES

PRE-DRILLING PROTOCOL

Planning

Prior to the start of drilling, necessary permits, site access agreements, and/or encroachment permits are obtained. As-built drawings are obtained if possible. At least 2 weeks in advance of drilling, notifications are made to the property owner, client representative, on-site facility manager, regulatory agency, and/or other appropriate parties. At least 48 hours prior to drilling, Underground Service Alert of Southern California, Arizona Blue Stake, or an equivalent utility locating service is notified. A geophysical survey may be conducted to locate subsurface utilities. Site plans and/or as-built drawings are compared to actual conditions observed at the site. The property owner/retailer is interviewed to gain information about locations of former UST systems (including dispensers, product lines, and vent lines). A visual inspection is made of the locations of the existing UST system, and scars and patches in pavement are noted. The critical zone, which is defined as 10 feet from any part of the UST system as well as the area between the dispensers and USTs, is identified, and any proposed drilling locations within the critical zone may be subject to special hole clearance techniques. Drilling locations within the critical zone are avoided if possible.

A site-specific, worker health and safety plan, including a JSA and traffic control plan for all soil sampling locations for the site, is available at all times during drilling activities. Prior to commencing field activities, a health and safety meeting is held among all on-site personnel involved in the operations, including subcontractors and visitors, and is documented with a health and safety meeting sign-in form. The emergency shut-off switch for the service station is located prior to the start of the drilling activities. A fire extinguisher and "No Smoking" signs (and Proposition 65 signs in California) are present at the site prior to the start of the drilling activities.

In order to determine the natural subsurface conditions, better recognize fill conditions, and prevent cross contamination, the first sampling location is generally located the furthest from any suspected underground improvement.

When drilling a soil boring in asphalt or concrete, a minimum 10-inch round cut is made. When advancing a direct-push location, a minimum 3.5-inch round cut is made.

Hole Clearance

The minimum hole clearance depths are 5 feet below grade (fbg) outside the critical zone and 8 fbg within the critical zone and are conducted as follows:

- 0 to 5 fbg: The area to be cleared exceeds the diameter of the largest tool to be advanced and is large enough to allow for visual inspection of any obstructions encountered. The first 1 to 2 feet of soil or fill is removed by hand digging, then the borehole is probed using a blunt-tipped tool to ensure that no obstructions exist anywhere near the potential path of the drill auger or push-type sampler. Probing is extended laterally as far as possible. Hand augering or post-hole digging then proceeds, but only to the depth that has been probed. If subsurface characteristics prohibit effective probing, a hand auger is carefully advanced past the point of probing. In this case, sufficient hand augering or post-hole digging is performed to remove all the soil in the area to be delineated. For soil borings located outside of the critical zone, an attempt should be made to probe an additional 3 feet.

- 5 to 8 fbg: For the soil borings located inside the critical zone, probing and handclearing an additional 3 feet is performed. If probing is met with refusal, then trained personnel advance a hand auger without excessive force.

Alternate or additional subsurface clearance procedures may also be employed, as required by clients, permit conditions, and/or anticipated subsurface conditions (for example, near major utility corridors or in hard soils). Alternate clearance techniques may include performing a geophysical investigation or using an air knife or water knife. If subsurface conditions prevent adequate subsurface clearance, the field activities cease until the client gives written approval of a procedure for continuation.

When pea gravel, fill sand, or other non-indigenous material is encountered, the sampling location is abandoned unless the absence of subsurface facilities can be demonstrated and client approval to proceed is obtained. If hole clearance activities are conducted prior to the actual day of drilling, the holes are covered with plates and/or backfilled.

If any portion of the UST system is encountered, or if there is any possibility that it has been encountered, the work ceases, and the client is notified immediately. If there is reason to believe that the product system has been damaged, the emergency shut-off switch is activated. The client will decide if additional uncovering by hand is required. If it is confirmed that the UST system has been encountered, tightness tests are performed as required by the client. The hole is backfilled only with client approval.

SOIL SAMPLING PROCEDURES

Soil samples are collected using one of the following methods:

- Manual drilling: Manual drilling utilizes a hand auger. Soil samples are collected with a drive sampler outfitted with steel or brass sleeves. The specific equipment used is noted on a log of exploratory boring.

- Truck-mounted, powered drilling: Truck-mounted, powered drilling utilizes hollow-stem flight auger drilling, air rotary drilling, percussion hammer drilling, or similar technologies. Soil samples are collected in steel or brass sleeves with a California-modified, split-spoon sampler or, for specific projects, a continuous sampler. The specific equipment used is noted on a log of exploratory boring.

- Direct push sampling: Direct push sampling utilizes Geoprobes, cone penetrometer testing rigs, or similar technologies. Soil samples are collected with a drive sampler outfitted with steel, acetate or brass sleeves. The specific equipment used is noted on a log of soil sample descriptions.

Before each soil sampling episode, the sampling equipment is decontaminated using a non-phosphate soap and water wash, and two tap-water rinses. The drill augers or direct-push rods are decontaminated with a steam cleaner between each soil boring (truck-mounted rigs).

Soil samples that are collected in sample sleeves are covered with aluminum foil or Teflon tape followed by plastic caps. If EPA Method 5035 is required, then 5 to 20 grams of soil is extracted from the sample and placed in methanol-preserved containers supplied by the laboratory, or subsamples are collected using Encore samplers. During the sampling process, soil samples and cuttings are field screened for VOCs using a photoionization detector calibrated to an isobutylene or hexane standard. The calibration information is recorded on an equipment calibration log. Any soil staining or discoloration is visually identified. Soils are classified according to the Unified Soil Classification System. Specific geologic and hydrogeologic information collected includes grading, plasticity, density, stiffness, mineral composition, moisture content, soil structure, grain size, degree of rounding, and other features that could affect contaminant transport. All data are recorded on a soil boring log under the supervision of a geologist registered in the state in which the site is located. The samples are labeled, sealed, recorded on a chain-of-custody record, and chilled to 4°C in accordance with the procedures outlined in the California State Water Resources Control Board's Leaking Underground Fuel Tank Field Manual or the Arizona Department of Environmental Quality's (ADEQ's) Leaking Underground Storage Tank Site Characterization Manual. Sample preservation, handling, and transportation procedures are consistent with Holguin, Fahan & Associates, Inc.'s quality assurance/quality control procedures. The samples are transported in a chilled container to a state-certified, hazardous waste testing laboratory.

Cuttings from the soil borings are stored in 55-gallon, Department of Transportation (DOT) approved drums, roll-off bins, or other appropriate containers, as approved by the client. Each container is labeled as waste material or non-hazardous waste, with the number of the soil boring(s) from which the waste was derived, the date the waste was generated, the generator name, and other pertinent information. The drums are stored at the site of generation, or at another location approved by the client until sample laboratory analytical results are obtained, at which time the soil is disposed of appropriately.

A soil boring log is completed for each soil sampling location and includes the following minimum information:

- date of drilling;
- project name and location;
- soil sample names and depths;
- soil descriptions and classifications;
- standard penetration counts (rigs);
- photoionization detector readings;
- drilling equipment;
- soil boring diameter;
- sampling equipment;
- depth to groundwater in soil boring;
- name of person performing logging;
- name of supervising registered geologist; and
- name of drilling company (rigs and direct push).

HYDROPUNCH GROUNDWATER SAMPLING PROCEDURES

Hydropunch sampling of groundwater is designed for collecting discrete, one-time samples of groundwater for analysis during the drilling or direct-push operations. The Hydropunch sampler consists of a 5-foot long, 1.5-inch diameter screen sheathed by a 2-inch diameter, steel barrel. A disposable point is connected to the bottom of the screen. The Hydropunch assembly is lowered through the hollow-stem auger and driven into the undisturbed soils below the base of the hole, or is pushed into the soil using a direct push rig. The outer sheath is then retracted to expose the screen. A bailer is then lowered into the Hydropunch assembly and retrieves a sample of the groundwater within the assembly.

The extracted groundwater is collected in chilled, 40-milliliter, volatile organic analysis vials having Teflon-lined caps, or other appropriate containers as required by the respective analytical method. For organic compound analyses, hydrochloric acid preservative is added to all containers by the laboratory to lower sample pH. Samples are held at 4°C while in the field

and in transit to the laboratory. Analysis is performed by a state-certified, hazardous waste testing laboratory.

Documentation requirements include:

- sample identification number;
- borehole identification number;
- time and date of sample collection;
- depth at which Hydropunch sample was collected;
- name of person collecting sample;
- number and types of sample containers; and
- type of preservative used, if any.

BOREHOLE COMPLETION PROCEDURES

All sampling locations are either properly abandoned or completed as a well.

Abandonment

Each borehole/sample location that is not completed as a well is backfilled with bentonite grout, neat cement, concrete, or bentonite chips with a permeability less than that of the surrounding soils, and/or soil cuttings, depending on local regulatory requirements or client instructions. Grout is placed by the tremie method. Backfilling is performed carefully to avoid bridging. The type of backfill material is noted on the log.

Well Installation

Wells are designed according to applicable state and local regulations as well as project needs. Details of the well design and construction are recorded on the log and include the following minimum information (in addition to the items noted above for soil borings):

- detailed drawing of well;
- type of well (groundwater, vadose, or air sparging);
- casing diameter and material;
- screen slot size;
- well depth and screen length (±1 foot);
- filter pack material, size, and placement depths;
- annular seal material and placement depths; and
- surface seal design/construction.

Groundwater monitoring wells are generally designed with 30 feet of slotted casing that crosses the water table, unless site conditions, project needs, or local regulations dictate a different well design. Vadose wells are designed with slotted casing appropriate for the project needs, e.g.

slotted in hydrocarbon-containing intervals for vapor extraction. Air sparging wells are typically designed with 5 feet of slotted casing placed 15 feet below the water table. The sand pack is placed at least two feet above the top of the screen, and at least 3 feet of low permeability seal material is placed between the sand pack and the surface seal, unless shallow groundwater conditions exist (less than 5 fbg). The sand pack and low permeability seal material are placed in the annular space from the bottom up using the tremie method.

When drilling in asphalt, a 24-inch round cut is made for the well pad. When drilling on concrete, a 2 x 2-foot square or 24-inch circle is sawcut. The well cover is traffic-rated and has a white lid with a black triangle painted on it (3 inches per side) or a black lid with a white triangle (3 inches per side). The well pad is completed using concrete of a color matching the existing surface. The well number is labeled on the outside of the well box/pad and the inside of the well box. The number on the outside is painted on with a stencil, stamped, or attached to the well with a metal plate. The number on the inside is written on the well cap with waterproof ink. The casing has a notch or indication on its north side indicating a unique measuring/surveying point. Well casings are capped with a locking or slip well cap.

Well Development

Well development is conducted by the use of surge blocks, bailers, pumps, or other appropriate methods in accordance with the requirements of the California Department of Water Resources Bulletin #74–81 dated December 1981, or ASTM International 4448-85a (as required by the ADEQ). Only formation water is used for surging the well. Well development continues until non-turbid groundwater is produced or turbidity stabilizes. The method of development and the volume of groundwater produced is recorded in the field log. All purged groundwater is held on-site, or at another location approved by the client, in sealed, 55-gallon DOT approved drums or other appropriate containers pending transport to an approved recycling facility.

Well Elevation Survey

The elevation of the north side of the top of well casing (or other appropriate reference point from which the depth to groundwater can be measured) is surveyed to an accuracy of ±0.01 foot. All measurements are reproduced to assure validity. Surveying may be performed by a state-licensed surveyor if required by state or local regulations. In the state of California, wells are surveyed in accordance with AB2886.

DATA REDUCTION

The data compiled from the soil borings are summarized and analyzed. A narrative summary of the soil characteristics is also presented. The logs are checked for the following information:

- correlation of stratigraphic units among sampling locations;
- identification of zones of potentially high hydraulic conductivity;
- identification of the confining layer;
- indication of unusual/unpredicted geologic features (fault zones, fracture traces, facies changes, solution channels, buried stream deposits, cross-cutting structures, pinchout zones, etc.); and
- continuity of petrographic features such as sorting, grain-size distribution, cementation, etc.

Soil boring/well locations are plotted on a properly scaled map. If appropriate, soil stratigraphy of the site is presented in a scaled cross section. Specific features that may impact contaminant migration, e.g., fault zones or impermeable layers, are discussed in narrative form and supplemented with graphical presentations as deemed appropriate.

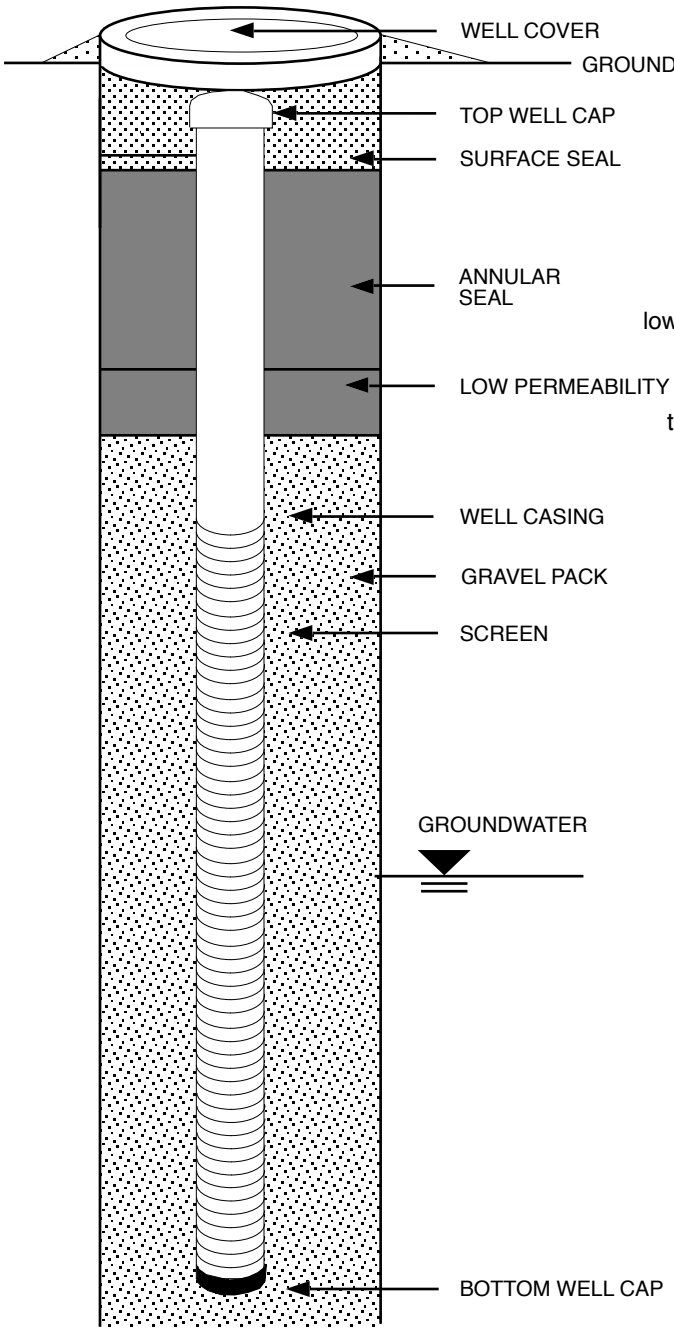
ATTACHMENT 2.

PROPOSED GROUNDWATER MONITORING WELL CONSTRUCTION DETAILS

GROUNDWATER EXTRACTION WELL
CONSTRUCTION DETAILS

Client Name	ExxonMobil Oil Corporation
Project Name	Former Service Station #18-M1A
Site Address	4770 East Seventh Street
	Long Beach, California
Supervised by	James Anderson, REA

Well No. MW-1 through MW-5



depth of surface seal	1 fbg
type of surface seal	concrete
annular seal thickness	N/A
type of annular seal	N/A
low permeability seal thickness	3 feet
type of low permeability seal	bentonite chips
diameter of well casing	4 inches
type of well casing	schedule 40 PVC
depth of top of gravel pack	4 fbg
type of gravel pack	#3 sand
depth of groundwater from reference point	45 fbg
depth of top of screen	5 fbg
screen slot size	0.020
depth of well	35 fbg
diameter of borehole	10 inches
depth of borehole	35 fbg

HOLGUIN, FAHAN & ASSOCIATES, INC.
(805) 652-0219
143 South Figueroa Street
Ventura, California 93001

ATTACHMENT 3.

GROUNDWATER MONITORING, SAMPLING, AND SAMPLE MANAGEMENT PROCEDURES

GROUNDWATER MONITORING, SAMPLING, AND SAMPLE MANAGEMENT PROCEDURES

NOTIFICATIONS

Prior to performing any field work, the client, regulatory agency, and property owner/manager with jurisdiction over the subject site are notified. Notifications are made a minimum of 48 hours prior to sampling, or as required by the client or regulator. E-mail notifications are used whenever possible.

WATER LEVEL MEASUREMENTS

Prior to performing purge or no-purge sampling, water level measurements are collected according to the following procedures.

- All wells are checked for phase-separated hydrocarbons (PSH) with a clear plastic or Teflon bailer or oil/water interface meter.

- To avoid cross contamination, water levels are measured starting with the historically "cleanest" wells and proceeding to the historically "dirtiest."

- Water levels within each well are measured to an accuracy of ±0.01 foot using an electronic measuring device and are referenced to the surveyed datum (well cover or top of casing). When measuring to top of casing, measurements are made to the notched (or otherwise marked) point on the casing. If no marking is visible, the measurement is made to the northern side of the casing. Measurements include the depth to groundwater, depth to PSH if applicable, and depth to bottom of well.

- If possible, all wells are gauged within a short time interval on the same day to obtain accurate measurements of the potentiometric surface.

- All measurements are reproduced to assure validity, and measuring equipment is decontaminated between wells.

PHASE-SEPARATED HYDROCARBONS

If PSH is encountered, its thickness and depth are measured using one of the following methods.

- An electronic oil/water interface meter is used to measure the depths to the top of the PSH and to the top of the water; and/or

- An electronic water level meter is used to measure the depth to the top of the water and a clear bailer is used to measure the PSH thickness.

The potentiometric surface elevation is calculated as:

TOC – DTW + 0.74PT

Where TOC = top-of-casing elevation, DTW = depth to water (interface), and PT = PSH thickness.

If PSH thickness is less than 0.02 foot, and purging of the well is planned prior to sample collection, the well is purged and sampled in accordance with the sample collection section of this standard operating procedure (SOP). If the PSH thickness is 0.02 foot or greater, the PSH is bailed from the well, and left on-site in a labeled and sealed container. Generally, no sample is collected for analysis from wells having a PSH thickness of greater than 0.02 foot. If a groundwater sample is collected to meet technical or regulatory objectives for the project, the sample is collected from the bottom of a disposable bailer lowered below the PSH-water interface. Wells containing PSH should not be purged, even if the other wells are purged.

NO-PURGE SAMPLING

Well purging is not conducted prior to sampling if purging is not needed to meet technical and/or regulatory project requirements. Following collection of water level measurements, the wells are sampled according to the protocol in the sample collection section of this document.

PURGING PROCEDURES

Well purging is conducted prior to sampling if purging is needed to meet technical and/or regulatory project requirements. Well purging may be performed using any of the following methodologies: dedicated pump, peristaltic pump with dedicated stinger, vacuum truck with dedicated stinger, electric submersible pump, bailer, bladder pump, or hand pump. The goal of purging wells is to remove stagnant water from the well and allow formation water to enter the well to be collected for analysis. If the wells are completed in low-yielding formations and are pumped dry, the purging may be discontinued. Purge rates should be low enough to prevent excessive agitation and/or prevent water from cascading into the well.

Dedicated Pump Purging

If permanent pumps are installed in the wells for groundwater remediation, the pumps are operated for at least 24 hours prior to sampling. If a dedicated sampling port is in place to collect samples of the pumped water from an individual well, then the port is used to collect the

sample. VOA vials are filled completely so that no headspace or air bubbles are present within the vial. Care is taken to minimize air exposure and turbulence. The vials are not overfilled, which could cause preservative to be lost. If no sampling port is in place, the pump is turned off and the wells are sampled according to the protocol in the sample collection section of this document.

Purging Methods

If dedicated pumps are not present at the site, then purging is accomplished by either standard purging or low-flow purging (also known as "micropurging").

Standard Purging

Standard purging methods involve removal of a set number of casing volumes of water and/or removal of sufficient water to stabilize indicator parameters such as temperature, pH, and conductivity (see below for measurement procedures). The water is removed using a vacuum or peristaltic pump, submersible electric pump, bailer, hand pump, or bladder pump, as appropriate for the site conditions. The specific purging method and equipment are recorded in the field log. A surge block may be used if the well screen becomes bridged with sediment or the produced groundwater is overly turbid.

Low-Flow Purging

Low-flow purging involves purging at sufficiently low rates of withdrawal that drawdown, aeration, and turbulence are minimal. Groundwater is removed using a submersible pump, bladder pump, or centrifugal pump. Water is purged from the well at flow rates that are generally in the range of 0.05 to 0.5 gallons per minute, but this may be lower or higher in wells of lower or higher productivity.

The pump intake is positioned in the mid-point of the saturated screened interval, but a different position may be used based on hydrogeologic conditions and/or analyte properties. For petroleum hydrocarbon and oxygenate sample analysis, the pump intake is placed in the upper third of the saturated screened interval. The type of pump, flow rate, total volume of water removed, and depth of the pump intake are noted on the field log. Low-flow purging continues until temperature, pH, and conductivity stabilize (see below for measurement procedures). Then, a water sample is collected from the purge water effluent stream or from a bailer. VOA vials are filled completely so that no headspace or air bubbles are present within the vial. Care is taken to minimize air exposure and turbulence. The vials are not overfilled, which could cause preservative to be lost.

Monitoring During Purging

During the purging process, groundwater is monitored for temperature, pH, and conductivity using a standard field meter. Dissolved oxygen, turbidity, and other parameters may be collected for project-specific needs. These water quality parameters are recorded on a field log. Purging continues until a minimum number of well volumes (3) are removed and/or temperature, pH, and conductivity stabilize. For standard purging, water quality parameters are measured in bailer samples or from the pump effluent. For low-flow purging, water quality parameters are continuously monitored during purging using a water quality meter housed within a Solinst flow-through cell, and stabilization generally occurs after about one casing volume is purged from a well.

Purge Water Storage and Disposal

If active groundwater treatment is occurring at the site, purge water may be disposed of through the treatment system. Otherwise, purge water is either stored on-site in Department of Transportation-approved 55-gallon drums, or transported offsite as non-hazardous waste for disposal or recycling at an approved facility.

SAMPLE COLLECTION PROCEDURES

For dedicated pumps with sampling ports and for low-flow purging, samples are collected directly from the purge water stream, as described above. For standard purging and dedicated pumps without a sampling port, sampling is performed after the water level in the well recharges to at least 80 percent of hydrostatic. Then, groundwater samples are collected using the following procedures.

- A clean Teflon bailer is lowered and partially submerged into the well water to collect a groundwater sample.

- If PSH is present in the sample bailer, PSH thickness is recorded on the field log, and no sample is collected for laboratory analysis.

- For volatile organic analyses, groundwater samples are collected in chilled, 40-milliliter, VOA vials with Teflon-lined caps. A pre-measured quantity of hydrochloric acid preservative is added to all vials by the laboratory prior to receipt by HFA. Samples are held at 4°C or less while in the field and in transit to the laboratory. Other appropriate containers, preservatives, and holding protocols are used for non-volatile analyses.

- VOA vials are filled completely so that no headspace or air bubbles are present within the vial. Care is taken so that the vials are not overfilled, and the preservative is not lost.

- Sample containers are immediately labeled and sealed after collection. For VOA vials, the label is placed to overlap the edge of the cap as a custody seal, unless a separate custody seal is being used.

- Samples are stored in a cooler while on-site and in transport to the laboratory or office. The cooler has sufficient ice to maintain appropriate temperature prior to collecting samples. The VOA vials are kept chilled both prior to and after filling. Hot or warm containers are not used when volatile compounds are the target analytes.

DECONTAMINATION PROCEDURES

Decontamination of monitoring and sampling equipment is performed prior to all monitoring and sampling activities. Decontamination procedures consist of a three-step process. The initial decontamination is performed using a non-phosphate soap, such as Simple Green or Alconox, in tap water in a 5-gallon bucket. A soft-bristle bottlebrush is used to thoroughly clean the inside and outside of the equipment. The brush is used in the first bucket only; it does not travel from bucket to bucket with the equipment. This procedure minimizes any transport of the contaminants, which should stay in the first bucket. The equipment is then rinsed in a second 5-gallon bucket of tap water, followed by a third 5-gallon bucket of tap water as a final rinse. The decontamination water is disposed of using the same procedures as the purge water.

WELL CONDITION

The condition of the well is checked during the monitoring event. The well lid and cap are secured, and any debris present in the well box is removed. Any deficiencies with the well box and pad that cannot be fixed during the monitoring event are noted in the log. The log is given to the project manager for correction of the deficiencies at a future date.

QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

A trip blank, temperature blank, and/or other blanks are taken for quality assurance/quality control (QA/QC) purposes.

- A trip blank sample is kept with any samples being analyzed for volatile organic compounds (VOCs). A trip blank is a sample of clean water that is supplied by the laboratory and is transported to and from the field and to the laboratory with the field samples. The designation "QCTRIPBK" or "QCTB" is used for the sample name on the field label. Samplers record on the chain-of-custody (COC) the date that the trip blank is taken to the field for sampling, not the date that the trip blank was prepared by the laboratory. One trip blank per cooler per day is collected. Unused trip blanks are stored in a cooler

dedicated to this purpose. The trip blank cooler is not refrigerated, but is kept in a clean location away from possible VOC contaminants.

- Temperature blank sample containers are supplied by the laboratory and kept in a cooler used to transport samples. The temperature blank is placed in the cooler prior to going to the field and is kept there until the cooler is delivered to the laboratory.

CHAIN OF CUSTODY

A chain of custody form is completed for each group of samples delivered to the laboratory, as follows.

- A separate COC is completed for each day of sampling. If samples are collected on separate days for the same site, a separate COC is completed for each sampling day, and the COC is always kept with the samples. If samples are shipped off-site for laboratory analysis, individual coolers with separate COCs are sent for each day/cooler shipped.

- All fields/spaces on the COC are filled out completely, and all persons having control of the samples sign the COC to show transfer of sample control between individuals. At times when the field sampler is not delivering samples directly to the laboratory, the samples may be turned over to a sample manager for shipping. In this instance, the sample manager takes custody of the samples, and both the sampler and sample manager sign and date the COC to clearly show custody transfer.

- The COC is placed inside the cooler, and a custody seal is placed on the outside of the cooler prior to shipping. The receiving laboratory indicates if the cooler was received with the custody seal intact.

- If samples are sent to the laboratory via UPS, FEDEX, etc., this fact is indicated on the COC, and the sample manager also indicates the date and time the custody seal is placed on cooler for delivery to the shipping agent (the shipping agent does not sign the COC).

- For trip blanks, the COC indicates the date the trip blank was taken to the field for sampling, not the date the trip blank was prepared by the laboratory (the latter date may appear on the VOA label).

- New electronic deliverable format (EDF) requirements of California AB2886 mandate that COCs and laboratory reports maintain consistent and unique names between sites (Global ID) and sample location/well names (Field Point ID). This information must be

consistent with the initial information supplied to GeoTracker, and for each subsequent quarterly sampling event.

SAMPLE HANDLING

Refrigerator Storage and Temperature Log

Samples may be stored in a refrigerator prior to transport to the laboratory. Refrigerator storage is maintained under the following conditions.

- Refrigerators used for sample storage are dedicated for that usage only (no food or other materials are stored in sample refrigerators).

- Refrigerators can be locked from the outside by a sample manager, and only the sample manager has access to the samples while they are in storage.

- Refrigerators are maintained at a temperature of 4˚C or less, and are adjusted daily depending on thermometer readings.

- Each refrigerator contains a dedicated, reliable thermometer. The thermometer is designed for use in a refrigerator and is fixed or secured to the inside of the unit. The thermometer range is specific for measuring temperatures less than 4˚C.

- A temperature log is kept on the outside of the refrigerator in a lightweight, three-ring binder, or similar logbook. Temperatures are recorded daily or when the refrigerator is open for sample management.

- Completed COCs are kept with the samples stored in the refrigerators. The COCs may be held on a clipboard outside the refrigerator, or may be placed inside the cooler if the entire cooler is placed inside the refrigerator.

- If a cooler is placed in the refrigerator, the cooler lid remains open to insure that samples are maintained at the refrigerator temperature.

Cooler Packing

The sample coolers are packed as directed by the receiving laboratory. The following cooler packing procedures are used.

- The cooler contains enough ice to maintain the required temperature.

- Water ice (not dry ice or ice packs) is used for shipping.

- The ice is placed above and below the samples in at least two sealable plastic bags. This procedure requires that the packing/divider material be removed and replaced.

- The COC is placed in the cooler in a sealed plastic bag, and the cooler lid is taped closed to secure it for transport and to minimize loss of temperature. A custody seal is placed vertically across the seam of the cooler lid.

ATTACHMENT 4.

WORKER HEALTH AND SAFETY PLAN

DATE: February 28, 2005

WORKER HEALTH AND SAFETY PLAN FOR UNDERGROUND STORAGE TANK INVESTIGATIONS
SITE-SPECIFIC INFORMATION

Site Address: 4770 East Seventh Street, Long Beach, California

Name of Business Occupying Site: ExxonMobil Oil Corporation Former Service Station #18-M1A

Responsible Party Name: ExxonMobil Oil Corporation

Responsible Party Contact: Jeneé Briggs Tel. #: (310) 212-2904

Agency Project Manager: Yue Rong Tel. #: (213) 576-6700

FIELD ACTIVITIES AND DURATION OF THIS INVESTIGATION:
Install five groundwater monitoring wells with an anticipated duration of 3 days

KNOWN HAZARDS AT THE SITE INCLUDE:
Gasoline, traffic, and subsurface/overhead structures and utilities

KEY PERSONNEL AND RESPONSIBILITIES:

NAME	RESPONSIBILITIES
Jeff Nobriga (805) 585-6376	SITE SAFETY OFFICER - Primarily responsible for site safety, response operations, and protection of the public. Responsible for work site inspections to identify particular hazards and define site security.
James Anderson, REA (805) 585-6371	PROJECT MANAGER - Primarily responsible for site characterization. The project manager delineates authority, coordinates activities and functions, and directs activities related to mitigative efforts of clean-up contractors.
Jeff Nobriga (805) 585-6376	SITE INVESTIGATIVE PERSONNEL - Responsible for actual field work including sampling, monitoring, equipment use, and other related tasks as defined by the project manager.

ANTICIPATED WEATHER CONDITIONS FOR THIS AREA DURING THE PROJECT'S DURATION WILL BE:

Temp. range: 55-75°F Humidity: low Ambient temp.: 65°F

Potential for heat stress: High: _____ Medium: _____ Low: X

ANTICIPATED PROTECTION LEVEL DURING THIS PROJECT*

Level "D" *Will be upgraded or downgraded per the exposure monitoring plan

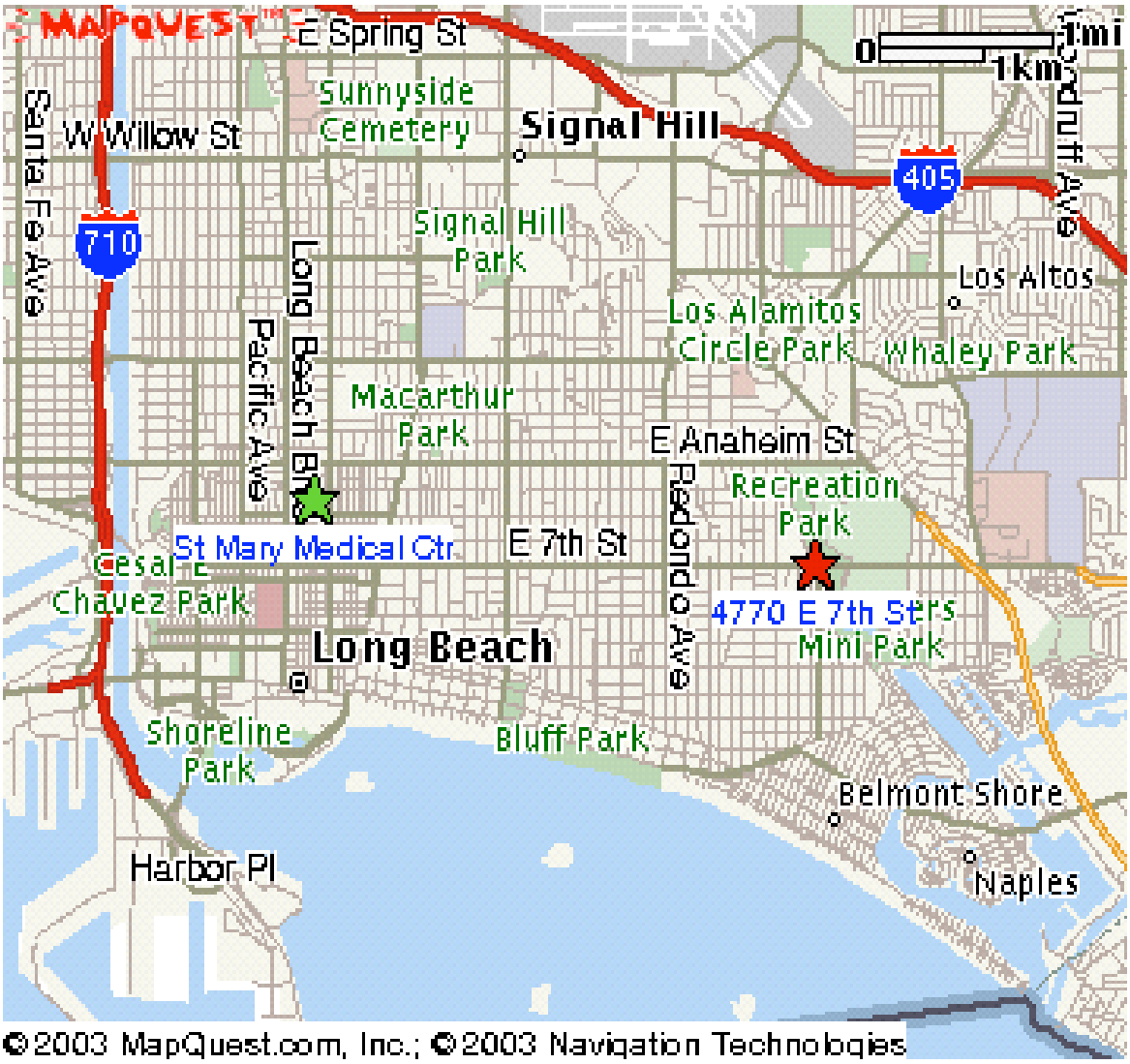
EMERGENCY INFORMATION:

All emergency calls: 911

Closest hospital with emergency room: St. Mary's Medical Center

1050 Linden Avenue, Long Beach, California, 90813, (562) 491-9000

Map Showing Route from Site to Hospital Attached? Yes: X No: _____



Estimated Travel Time: 20 minutes- 3.24 miles

1: Start out going West on E 7TH ST toward ROYCROFT AVE.2.70 miles
2: Turn RIGHT onto ATLANTIC AVE.0.39 miles
3: Turn LEFT onto E 11TH ST.0.09 miles
4: Turn LEFT onto LINDEN AVE (Gate access required).0.06 miles

LEGEND	EXXONMOBIL OIL CORPORATION
ST. MARY'S MEDICAL CENTER 1050 LINDEN AVENUE LONG BEACH, CALIFORNIA 90813 (562) 491-9000	FORMER SERVICE STATION #18-M1A 4770 EAST 7TH STREET LONG BEACH, CALIFORNIA FIGURE 1 - HOSPITAL MAP
	HOLGUIN, FAHAN & ASSOCIATES, INC.

REVISION DATE: JANUARY 7, 2005: JPK

WORKER HEALTH AND SAFETY PLAN FOR UNDERGROUND STORAGE TANK SITE INVESTIGATIONS

This document outlines Holguin, Fahan & Associates, Inc.'s (HFA's) worker health and safety plan (HASP) for its employees to be used at underground storage tank (UST) sites. Site-specific information is provided on the cover page of this document. Prior to the start of each day's field activities, the HASP will be reviewed by all on-site personnel at a health and safety tailgate meeting. All on-site employees, subcontractors, and regulatory agents will acknowledge that they have reviewed the HASP by signing the tailgate meeting form (see Exhibit 1 for the form).

This HASP was developed by HFA's industrial hygienist through consultation of the following documents:

- Occupational Safety and Health Administration (OSHA) 29 CFR 1910 – "Hazardous Waste Operations and Emergency Response, Final Ruling," March 1989;
- National Institute of Occupational Safety and Health/OSHA/United States Coast Guard/Environmental Protections Agency "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," October 1985;
- HFA's Corporate Health and Safety Program;
- ExxonMobil Oil Corporation's Operations Integrity Management System; and
- Chevron Environmental Management Company's Loss Prevention System.

This worker health and safety plan is divided into the following categories:

1. Job Hazard Assessment;
2. Exposure Monitoring Plan;
3. Personal Protective Equipment;
4. Work Zones and Security Measures;
5. Decontamination and Disposal;
6. Employee Training; and
7. Emergency Procedures.

1. JOB HAZARD ASSESSMENT

Immediate tasks at any UST site include an evaluation of any present or potential threat to worker and public safety. Questions need to be answered regarding the dangers of significant vapor exposures and potential explosion hazards.

An analysis of known and potential site-specific hazards is outlined in the Job Safety Analysis in Exhibit 2.

Potential Chemical Hazards

The chemical components of gasoline that are the most dangerous to site workers are gasoline, hydrocarbon-containing soil, benzene, toluene, ethylbenzene, xylene, methyl tertiary butyl ether (MTBE), and potentially, organic lead (see Exhibit 3 for the Material Safety Data Sheets). In addition, solvents such as 1,2-dichlorobenzene and 1,2-dichloroethane may be used as cleaning solutions at service stations. The primary health risks associated with each chemical are described below.

Gasoline (free-phase) – Confirmed animal carcinogen with unknown relevance to humans. A threshold limit value (TLV) (8-hour average) of 300 parts per million by volume (ppmv) and a short-term exposure limit (STEL) (15 minute average) of 500 ppmv have been assigned to gasoline (see Exhibit 3). This value of was assigned based on an average of 2 percent benzene (0.5 ppmv TLV) in gasoline. Low-level inhalation exposure to gasoline can cause irritation to the eyes, nose, and respiratory system; headache; dizziness; and nausea. Contact with the skin causes irritation.

Hydrocarbon-containing soil – Generally contains less than 1 percent gasoline. A TLV of 300 ppmv has been assigned to soil containing gasoline hydrocarbons.

Benzene – Known human carcinogen. A TLV of 0.5 ppmv or 1.6 milligrams per cubic meter (mg/m^3) and an STEL of 2.5 parts per million (ppm) have been assigned to benzene. Benzene has a low odor threshold limit of 1.4 ppm. Low-level inhalation exposure to benzene can cause irritation to the eyes, nose, and respiratory system; dizziness; headache; and nausea.

Toluene – A TLV of 1,500 ppm or 187.5 mg/m^3 has been assigned to toluene. Toluene has a low odor threshold limit of 2.1 ppm. Low-level inhalation exposure to toluene can cause fatigue, weakness, confusion, and euphoria.

Ethylbenzene – A TLV of 100 ppm or 435 mg/m^3 has been assigned to ethylbenzene. Ethylbenzene has a low odor threshold limit of 2 ppm. Low-level inhalation exposure to ethylbenzene can cause irritation to the eyes and mucous membranes.

Xylene – A TLV of 100 ppm or 435 mg/m^3 has been assigned to xylene. No low odor threshold limit has been established for xylene. Low-level inhalation exposure to xylene can cause dizziness, headache, nausea, and drowsiness.

MTBE – Confirmed animal carcinogen with unknown relevance to humans. A TLV of 40 ppm or 144 mg/m^3 has been assigned to MTBE. In laboratory animals, inhalation exposure can cause hyperactivity, coordination problems, convulsions, and unconsciousness.

Ethanol – A TLV of 1,000 ppm or 1,900 mg/m^3 has been assigned to ethanol. High-level inhalation exposure can cause eye and respiratory tract irritation, fatigue, headache, and drowsiness. No reports of chronic exposure to vapors have been reported.

Tetraethyl Lead (Organic Lead) – A TLV of 0.1 mg/m^3 has been assigned to tetraethyl lead. Tetraethyl lead is a colorless or red-dyed liquid at atmospheric conditions. No data are available concerning odor threshold. Acute vapor exposure can cause insomnia, delirium, coma, and skin irritation.

1,2-Dichlorobenzene – A TLV of 50 ppm or 306 mg/m^3 has been assigned to 1,2-dichlorobenzene. 1,2-dichlorobenzene has a low odor threshold limit of 4.0 ppm. Acute vapor exposure can cause coughing, drowsiness, and skin irritation.

1,2-Dichloroethane – A TLV of 200 ppm has been assigned to 1,2-dichlorethane. No data are available concerning odor threshold. Acute vapor exposure can cause coughing, dizziness, drowsiness, and skin irritation.

Potential Physical Hazards

Trenching – Fuel vapor levels will be monitored using a lower explosive limit (LEL) meter or photoionization detector (PID). The presence of underground utilities and fuel facilities is also of concern, and the applicable utility markout service will be notified in advance of any trenching work for identification of all underground structures in the immediate area.

Drilling – Fuel vapor levels will be monitored using a PID or LEL meter. The presence of underground utilities is also of concern, and the applicable utility markout service will be notified in advance of any drilling work for identification of all underground utilities in the immediate area.

Excavations – Fuel vapor levels will be monitored using a PID or LEL meter. All excavations greater than 4 feet in depth will not be entered unless the excavation is properly sloped or shored in accordance with OSHA regulations and certified by a competent person. Confined spaces are never to be entered.

Sampling – Use of personal protective equipment and decontamination procedures will minimize the potential for exposure for personnel conducting site investigation activities.

Traffic – In areas where vehicular traffic is anticipated, a traffic control plan will be developed as part of the HASP. A traffic vest will be worn, traffic control devices will be placed around the work area, and workers will face oncoming traffic, as conditions allow. The vehicle should be placed between the work area and oncoming traffic, where possible. For work in the public right-of-way, traffic control (delineators, signs, light boards, and so forth) will be setup in accordance with the Work Area Traffic Control Handbook and local agency requirements as outlined in the permit. For high-risk traffic areas, at least two workers will be present.

Heat – The effects of high temperatures will be monitored by each individual and by all coworkers at the site. If site ambient temperature exceeds 90°F and the potential for heat stress is considered to be high as indicated on the site-specific information page, the effects should be controlled through regular work breaks; wearing loose, lightweight clothing; working during cooler hours of the day; and ingestion of cool fluids (recommended 8 ounces every 20 minutes) as outlined in the American Conference of Governmental Industrial Hygienists' Guidance for heat stress conditions. Common heat disorders, symptoms, and first aid measures include the following.

- Heat cramps – Heat cramps are caused by dehydration and loss of salt. Its symptoms include spasms or cramps in the limbs and hot skin. Workers should consume fluids at frequent intervals.

- Heat exhaustion – Symptoms include thirst, headache, clammy skin, nausea, vertigo, weakness, and fainting. Clothing should be loosened, and the worker should be removed from the hot environment and given fluids and adequate rest.

- Heatstroke – Symptoms include red, dry skin; confusion; irrational behavior; lack of sweating; convulsions; and potentially loss of consciousness. Professional medical assistance should be called immediately. In the interim, the worker should be taken out of the hot environment, outer clothing should be removed, the skin should be wetted, and the worker should be given fluids.

2. EXPOSURE MONITORING PLAN

Potential exposure hazards found at UST sites primarily include liquid gasoline or airborne vapors from leaking USTs or associated piping, containment boxes, sumps, and hydrocarbon-containing soil and groundwater.

The most dangerous airborne vapor likely to be encountered during a UST investigation is benzene. Gasoline vapor concentration levels will be monitored in the breathing zone with a PID, calibrated prior to use on a daily basis to an isobutylene standard, or an LEL meter using a hexane standard. The calibration will be recorded, and a copy of the documentation will be kept with the PID and LEL. When the action level of 150 ppmv (one-half of the TLV of gasoline) is detected and sustained in the breathing zone, respiratory protection will be required using full-face or half-face respirators with organic vapor cartridges (Level C protection), and vapor suppression, ventilation, or other engineering controls may be applied.

Monitoring for combustible gases will also be performed using an LEL meter when vapor concentrations in excess of 2,000 ppmv are detected with the PID. The withdrawal level is 20 percent of the LEL for gasoline vapors, or 2,800 ppmv, in the breathing zone. If this level is exceeded, the work party will be IMMEDIATELY withdrawn from the work area.

3. PERSONAL PROTECTIVE EQUIPMENT

The level of protection during the site investigation will usually be Level D. Level D protective equipment includes: long pants, safety boots, traffic vest, hearing protection, safety glasses, gloves, and hard hats if drilling or trenching operations are in progress. A flame-retardant suit is required if phase-separated hydrocarbons are encountered.

Upgrading the protection level would be based on airborne vapor concentration equaling or exceeding the action level (150 ppmv). An upgrade to Level C protection would be required if the action level is equaled or exceeded. The equipment required for Level C would be a full-face or half-face, air purifying respirator and may include Tyvek suits with taped arm and leg seals, in addition to the Level D protective equipment. If the vapor concentrations exceed 1,000 ppmv, canister-equipped respirators will be used. If the withdrawal level is met or exceeded (20 percent of the LEL in the breathing zone), work will cease until the vapor level is measured to be below 20 percent of the LEL, and vapor suppression, ventilation, or other engineering controls will be applied.

If the OSHA Permissible Exposure Limit or a time-weighted average of 85 decibels is exceeded, or if heavy equipment (i.e., jackhammer, drill rig, backhoe) is used, hearing protection will be worn.

A fire extinguisher, first aid kit, and eyewash will be maintained on-site. Decisions for workers' safety and the personal protective equipment to be worn are based on a continual evaluation of conditions.

4. WORK ZONES AND SECURITY MEASURES

To facilitate a minimum exposure to dangerous vapors and/or physical hazards, only authorized persons will be allowed in the work zone. Work zones will be defined by the client, the general contractor, or HFA staff, who will also be responsible for maintaining security within these zones. The work zone will be delineated from the job site using traffic delineators, caution tape, and so forth. A traffic control plan delineating the work zone will be developed as part of the HASP. Only the minimum number of personnel necessary for the UST investigation will be present in the work zone. Smoking is never permitted in the work zone.

5. DECONTAMINATION AND DISPOSAL

HFA's standard operating procedures (SOP) establish practices that minimize contact with potentially impacted materials. Decontamination procedures are used if there is suspected or known impacted equipment, supplies, instruments, or any personnel surfaces. Nitrile gloves should be worn during decontamination activities. The equipment will be decontaminated using a nonphosphate soap and water wash and two tap-water rinses. Wash water will be recycled in accordance with the appropriate regulatory procedures and HFA's SOP for soil boring, direct-push sampling, and well construction.

6. EMPLOYEE TRAINING

All applicable HFA employees working on the site will have had, at a minimum, the required 40-hour OSHA Training for Hazardous Waste Site Activities with annual 8-hour refresher training and medical surveillance exam (29 CFR 1910, 120), which includes training in the use of respirators and other personal protective equipment. Annual individualized respirator fit testing is required of all applicable HFA employees working at the site.

Personnel in a supervisory role will have undergone an additional 8 hours of training in accordance with OSHA requirements (29 CFR 1910, 120, page 373 [4]).

7. EMERGENCY PROCEDURES

If an emergency occurs, on-site personnel will contact EMT personnel by dialing 911. All work will cease, and reasonable efforts will be made to secure the work area, if it is deemed safe to do so.

In the event of overt personnel exposure (i.e., skin contact, inhalation, or ingestion), the victim will be transported to and treated at the closest hospital (see hospital map attached). In the event of a more serious injury, site personnel will contact the local emergency services by dialing 911 for assistance.

If a fuel release occurs as a result of site investigation activities, the emergency shutoff switch at active service station locations will be activated. Absorbent or other available material (i.e., bentonite and cat litter) will be placed around the spill to prevent the substance from entering utility vaults or the public right-of-way. A work zone will be setup around the release, and fuel vapor levels will be monitored with an LEL or PID. The appropriate agencies will be notified in accordance with local regulations, and all absorbent material will be disposed of in an appropriate manner.

In the event of a major emergency or natural disaster, all workers will evacuate the work area and meet at a previously designated safe area, where all personnel will be accounted for.

EXHIBIT 1.

TAILGATE MEETING FORM

DATE:

SITE:

HEALTH AND SAFETY MEETING
DAILY SIGN-IN SHEET

By signing, I acknowledge that I have reviewed the site health and safety plan (HASP) and have participated in a site safety meeting conducted prior to the start of work. I agree to abide by the guidelines of the HASP.

NAME	COMPANY	SIGNATURE	TIME (IN/OUT)
			/_____
			/_____
			/_____
			/_____
			/_____
			/_____
			/_____
			/_____
			/_____
			/_____
			/_____
			/_____
			/_____
			/_____
			/_____
			/_____
			/_____

Note: This sign-in sheet may be substituted in the field by a client or project specific sign-in sheet.

EXHIBIT 2.

JOB SAFETY ANALYSIS

Job Safety Analysis

JSA Type: ☒ SAR Operations ☐ Transport ☐ Office ☐ Construction	☐ New ☒ Revised	Date: 02/28/05
HFA Office: Ventura Client: ExxonMobil Oil Corporation Loc: Former Service Station #18-M1A, 4770 East Seventh Street, Long Beach, California		
Work Type: Environmental	Work Activity: Soil Boring/Monitoring Well Hole Clearance, Drilling and Installation	

Personal Protective Equipment (PPE):

Minimum PPE is Level D including: safety glasses or goggles, hard hat, traffic vest, steel-toed boots, hearing protection, and gloves (type dependent on job-specific requirements)

Additional PPE may be required in the Health & Safety Plan (HASP). Also refer to the HASP for required traffic control, air monitoring, and emergency procedures.

Development Team	Position/Title	Reviewed By	Position/Title	Date
Jon Griffiths	Corporate Safety Coordinator	Mark Fahan	VP/Operations Manager	
James Anderson	Project Manager			

Field staff must review job-specific work plan and coordinate with project manager to verify that all up-front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g. site managers, inspectors, clients, subcontractors, etc.). Safe Performance Self Assessment (SPSA) procedures must be used prior to starting each task. Also consider traffic and weather conditions (heat, cold, rain, lightning).

All employees assigned to this task must attend the daily site safety meeting, which will include the review of this and all other pertinent JSAs, Site Specific Health and Safety Plan (HASP), types of potential hazards, and actual hazards present and controls for these hazards. This meeting must be documented at the beginning of each workday, by completing the Daily Site Safety Meeting Checklist.

Job Steps	Potential Hazard	Critical Actions
1. Personal health and safety/Daily Safety Meeting	• Extreme weather conditions	• Drink plenty of fluids and have plenty of fluids available (water and sports drinks are recommended; coffee and soda may cause further dehydration). • Wear proper attire for heat or cold. • Use sunscreen to prevent sunburn and lip balm to prevent chapped lips. • Be aware of, faintness, dizziness, unconsciousness, paleness, and profuse sweating in personnel (contact PM or if severe, contact emergency personnel). • Redness to the face, high body temperature, and lack of sweating may indicate heat stroke (contact emergency personnel immediately)
	• General	• Conduct safety meeting to review site conditions prior to start work • Identify nearest hospital, location of health and safety equipment and site emergency shutoff switch
2. Site borings, core/cookie cut surface	• Station traffic/pedestrians	• Watch for vehicles • Set up exclusion zone and traffic control per written plan • Post signs (no smoking, caution hardhat area, prop 65 and do not enter)

	• Subsurface structures	• Review geophysical, asbuilt and public utility markout service markings
	• Noise	• Wear hearing protection during use of coring machine/drill rig
	• Equipment or Injury during use of air knife, concrete/ asphalt coring machinery	• Wear safety glasses, gloves, and all other PPE when coring is taking place • Keep hands clear of moving objects/pinch points • Evaluate need for moving rig prior to hole clearance • Identify emergency shutoff on equipment
	• Fire	• A fire extinguisher must be available on-site • Follow requirements of hot work permit (air monitoring for 10% of LEL)
3. Clear borehole manually/ air knife	• Station traffic/public access	• Wear traffic vest and watch for vehicles (see Job Step 2 critical actions) • Have one spotter for each potential obstruction watch while driller moves large vehicle • Chock wheels on large vehicles • Set-up other vehicles and caution tape around exclusion zone • Set-up applicable signs
	• Subsurface structures	• Follow all client and company-required protocols for borehole clearance • Ensure subsurface utilities are marked prior to clearing the borehole • Watch for changes in soil types or other indications of backfill or non-native material • Lockout/tagout utilities where required
	• Trip/fall hazards	• Maintain good housekeeping and designate clear paths of travel
	• Noise	• Wear hearing protection during use of rig
	• Flying debris • Back strain • Hydrocarbon exposure	• Wear proper eye protection • Use proper lifting techniques and tools • Wear appropriate PPE (including nitrile gloves) and monitor breathing space using calibrated PID • Wash hands prior to eating, drinking, or smoking.
	• Fire	• Follow requirements of hot work permit • A fire extinguisher must be available on-site • Identify emergency shutoff switch on rig
4. Set-up/mast-up drill rig	• Overhead obstructions/Power lines	• Check area for obstructions beforehand • Have one spotter for each potential obstruction watch while driller moves vehicle and/or raises mast • Do not move drill rig with mast raised • Keep mast at least 10 feet from overhead power lines
	• Station traffic/public access	• Evaluate parking rig to minimize threats from traffic, vapor sources and flying

	• Roll Over	debris • Set-up other vehicles and caution tape around exclusion zone • Set-up applicable signs • Cross all hills and obstructions head on with mast lowered • Set riggers prior to raising mast
5. Drill, collect samples	• Moving parts, flying dirt/mud, fall from height, hand tools • Trip/fall hazards • Noise • Hydrocarbon exposure • Fire • Back strain • Cross-contamination of samples and /or borings	• Wear prescribed PPE (hard hat, gloves, safety glasses, etc.) • Be aware of hazards • Stay away from moving parts/pinch points and fall from height hazards when possible • Avoid working directly behind drill rig • Identify emergency shutoff on rig • Maintain good housekeeping and designate clear paths of travel • Wear hearing protection during use of rig • Wear nitrile rubber gloves • Wash hands prior to eating, drinking, or smoking. • Screen samples and breathing space with PID, upgrade to OSHA Level C if necessary (organic vapor respirator) • Have fire extinguisher available on-site • Follow requirements of hotwork permit • Use proper lifting techniques and tools • Use triple bucket decontamination for all sampling equipment, and steam clean auger flights between boreholes
6. Set well casing, backfill and surface borings, set well box	• Station traffic • Inadequate sealing of hole/settling • Cement dust exposure • Hand tools	• Wear PPE including reflective traffic vest and watch for traffic (see Job Step 2 critical actions) • Mix grout to specification and completely fill the hole (when using chips, hydrate completely) • Do not allow cement to come in contact with skin and avoid breathing cement dust • Wear leather gloves, safety glasses, and other PPE as required
7. Site cleanup	• Traffic • Debris or equipment left on-site or unsecured can cause tripping hazard	• Wear traffic vest and watch for vehicles • Make careful visual sweep of site • Check for tools, debris, or dirt left on-site • Remove free standing water by sweeping

EXHIBIT 3.

MATERIAL SAFETY DATA SHEETS

ExxonMobil

123455-20 GASOLINE, UNLEADED AUTOMOTIVE
MATERIAL SAFETY DATA BULLETIN

---

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: GASOLINE, UNLEADED AUTOMOTIVE
SUPPLIER: EXXONMOBIL OIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA 22037

24 - Hour Health and Safety Emergency (call collect): 609-737-4411

24 - Hour Transportation Emergency:
CHEMTREC: 800-424-9300 202-483-7616
LUBES AND FUELS: 281-834-3296

Product and Technical Information:
Lubricants and Specialties: 800-662-4525 800-443-9966
Fuels Products: 800-947-9147
MSDS Fax on Demand: 613-228-1467
MSDS Internet Website: http://emmsds.ihssolutions.com/

---

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAMES AND SYNONYMS: GASOLINE AND PROPRIETARY ADDITIVES

GLOBALLY REPORTABLE MSDS INGREDIENTS:

Substance Name	Approx. Wt%
GASOLINE	100

COMPONENT(S) OF PRODUCT INGREDIENTS INCLUDE:

METHYL-TERT-BUTYL ETHER (1634-04-4)	< 16
ETHANOL (64-17-5)	< 11
XYLENE (1330-20-7)	10
TRIMETHYL BENZENE (25551-13-7)	8
TOLUENE (108-88-3)	6

ETHYL BENZENE (100-41-4)	3
N-HEXANE (110-54-3)	3
BENZENE (71-43-2)	2
NAPHTHALENE (91-20-3)	0.5

NOTE: The concentration of the components shown above may vary substantially. In certain countries benzene content may be limited to lower levels (eg. US reformulated gasoline). Oxygenates such as tertiary-amyl-methyl ether, ethanol, di-isopropyl ether, and ethyl-tertiary-butyl ether may be present (eg. concentration to provide a minimum oxygen content of 1.5 Wt% in the US). Because of volatility considerations, gasoline vapor may have concentrations of components very different from those of liquid gasoline. The major components of gasoline vapor are: butane, isobutane, pentane and isopentane. The reportable component percentages, shown in the Regulatory Information section, are based on API's evaluation of a typical gasoline mixture.

See Section 8 for exposure limits (if applicable).

3. HAZARDS IDENTIFICATION

This product is considered hazardous according to regulatory guidelines (See Section 15).

EMERGENCY OVERVIEW: Clear (May Be Dyed) Liquid. EXTREMELY FLAMMABLE, HIGH HAZARD. Liquid can release considerable vapor at temperatures below ambient which readily form flammable mixtures. Vapors settle to ground level and may reach, via drains and other underground passages, ignition sources remote from the point of escape. Product can accumulate a static charge which may cause a fire or explosion. DOT ERG No. : 128

POTENTIAL HEALTH EFFECTS: Skin irritation. May cause eye and respiratory irritation, headache, dizziness, nausea, loss of consciousness, and in cases of extreme exposure, possibly death. Low viscosity material-if swallowed may enter the lungs and cause lung damage. Overexposure to benzene may result in cancer, blood disorders and damage to the bone marrow. Long-term exposure to gasoline vapor has caused kidney and liver cancer in laboratory animals. Case reports of chronic gasoline abuse (such as sniffing) and chronic misuse as a solvent or as a cleaning agent have shown a range of nervous system effects, sudden deaths from heart attacks, blood effects and leukemia. These effects are not expected to occur at exposure levels encountered in the distribution and use of gasoline as a motor fuel.

POTENTIAL ENVIRONMENTAL EFFECTS: Toxic to aquatic organisms; may cause long-term adverse effects in the aquatic environment.

For further health effects/toxicological data, see Section 11.

4. FIRST AID MEASURES

EYE CONTACT: Flush thoroughly with water. If irritation occurs, call a physician.

SKIN CONTACT: Wash contact areas with soap and water. Immediately remove contaminated clothing, including shoes. (See Section 16 - Injection Injury)

INHALATION: Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with mechanical device or use mouth-to-mouth resuscitation.

INGESTION: Seek immediate medical attention. Do not induce vomiting.

NOTE TO PHYSICIANS: Material if ingested may be aspirated into the lungs and can cause chemical pneumonitis. PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE: Skin contact may aggravate an existing dermatitis. Benzene- Individuals with liver disease may be more susceptible to toxic effects. Hexane- Individuals with neurological disease should avoid exposure.

5. FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA: Carbon Dioxide, Foam, Dry Chemical, Water Fog.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area. For large spills, fire fighting foam is the preferred agent and should be applied in sufficient quantities to blanket the product surface. Water may be ineffective, but water should be used to keep fire-exposed containers cool. Water spray may be used to flush spill away from exposures, but good judgement should be practiced to prevent spreading of the product into sewers, streams or drinking water supplies. If a leak or spill has not ignited, apply a foam blanket to suppress the release of vapors. If foam is not available, a water spray curtain can be used to disperse vapors and to protect personnel attempting to stop the leak.

SPECIAL PROTECTIVE EQUIPMENT: For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTREMELY FLAMMABLE, HIGH HAZARD. Liquid can release considerable vapor at temperatures below ambient which readily form flammable mixtures. Vapors settle to ground level and may reach, via drains and other underground passages, ignition sources remote from the point of escape. Product can accumulate a static charge which may cause a fire or explosion.

COMBUSTION PRODUCTS: Fumes, smoke, carbon monoxide, sulfur oxides, aldehydes and other decomposition products, in the case of incomplete combustion.

Flash Point C(F): < -40(-40) (ASTM D-56).

Flammable Limits (approx.% vol.in air) - LEL: 1.4%, UEL: 7.6%

NFPA HAZARD ID: Health: 1, Flammability: 3, Reactivity: 0

6. ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES: Report spills/releases as required to appropriate authorities. U.S. Coast Guard and EPA regulations require immediate reporting of spills/releases that could reach any waterway including intermittent dry creeks. Report

spill/release to Coast Guard National Response Center toll free number (800)424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED:
LAND SPILL: Eliminate sources of ignition. Warn occupants in downwind areas of fire and explosion hazard. Shut off source taking normal safety precautions. Take measures to minimize the effects on ground water. Recover by pumping using explosion-proof equipment or contain spilled liquid with sand or other suitable absorbent and remove mechanically into containers. If necessary, dispose of adsorbed residues as directed in Section 13.
WATER SPILL: Eliminate sources of ignition. Advise occupants and ships in the vicinity in downwind areas of fire and explosion hazard and warn them to stay clear. Notify port and other relevant authorities. Do not confine in area of leakage. Allow liquid to evaporate from the surface. Do not use dispersants.

ENVIRONMENTAL PRECAUTIONS: Prevent material from entering sewers, water sources or low lying areas; advise the relevant authorities if it has, or if it contaminates soil/vegetation.

PERSONAL PRECAUTIONS: See Section 8

---

7. HANDLING AND STORAGE

HANDLING: USE NON-SPARKING TOOLS AND EXPLOSION-PROOF EQUIPMENT. NEVER SIPHON GASOLINE BY MOUTH. GASOLINE SHOULD NOT BE USED AS A SOLVENT OR AS A CLEANING AGENT. Avoid contact with skin. Avoid inhalation of vapors or mists. Use in well ventilated area away from all ignition sources. This liquid is volatile and gives off invisible vapors. Either the liquid or vapor may settle in low areas or travel some distance along the ground or surface to ignition sources where they may ignite or explode. Use product with caution around heat, sparks, pilot lights, static electricity, and open flames. It is unlawful and dangerous to put gasoline into unapproved containers. Do not fill container in or on a vehicle. Static electricity may ignite vapors and cause fire. Place container on ground when filling and keep nozzle in contact with container. See Section 8 for additional personal protection advice when handling this product.

STORAGE: Drums must be grounded and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters. Store away from all ignition sources in a cool, well ventilated area equipped with an automatic sprinkling system. Outside or detached storage preferred. Storage containers should be grounded and bonded.

SPECIAL PRECAUTIONS: To prevent and minimize fire or explosion risk from static accumulation and discharge, effectively bond and/or ground product transfer system. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers, etc.) in or around any fueling operation or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. Electrical equipment and fittings must comply with local fire prevention regulations for this class of product. Use the correct grounding procedures. Refer to national or local regulations covering safety at petroleum handling and storage areas for this product.

EMPTY CONTAINER WARNING: Empty containers retain residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS:

ExxonMobil recommends an 8-hour time-weighted average (TWA) exposure of 300 mg/m3 (100 ppm vapor).

		---TWA---		----STEL---		NOTE
Substance Name (CAS-No.)	Source	ppm	mg/m3	ppm	mg/m3	
GASOLINE						
	OSHA	300	900	500	1500	
	ACGIH	300	890	500	1480	
METHYL-TERT-BUTYL ETHER (1634-04-4)						
	ACGIH	40	144			
	XOM	25		75		
ETHANOL (64-17-5)						
	OSHA	1000	1900			
	ACGIH	1000	1880			
XYLENE (1330-20-7)						
O, M, P, -Isomers	OSHA	100	435	150	655	
O, M, P, -Isomers	ACGIH	100	434	150	651	
TRIMETHYL BENZENE (25551-13-7)						
	OSHA	25	125			
	ACGIH	25	123			
TOLUENE (108-88-3)						
	OSHA	100	375	150	560	
Skin	ACGIH	50	188			
	XOM		200			
ETHYL BENZENE (100-41-4)						
	OSHA	100	435	125	545	
	ACGIH	100	434	125	543	
N-HEXANE (110-54-3)						
	OSHA	50	180			

Other Isomers	OSHA	500	1800	1000	3600
N-Hexane Skin	ACGIH	50	176		
Other Isomers	ACGIH	500	1760	1000	3500
BENZENE (71-43-2)					
	OSHA	1		5	
Skin	ACGIH	0.5	1.6	2.5	8
NAPHTHALENE (91-20-3)					
	OSHA	10	50	15	75
	ACGIH	10	52	15	79

NOTE: Limits shown for guidance only. Follow applicable regulations.

VENTILATION: Ventilation equipment must be explosion proof.
RESPIRATORY PROTECTION: Approved respiratory equipment must be used when airborne concentrations are unknown or exceed the recommended exposure limit. Self-contained breathing apparatus may be required for use in confined or enclosed spaces.
EYE PROTECTION: If splash with liquid is possible, chemical type goggles should be worn.
SKIN PROTECTION: Impervious gloves should be worn. Good personal hygiene practices should always be followed.

9. PHYSICAL AND CHEMICAL PROPERTIES

Typical physical properties are given below. Consult Product Data Sheet for specific details.

APPEARANCE: Liquid
COLOR: Clear (May Be Dyed)
ODOR: Gasoline
ODOR THRESHOLD-ppm: NE
pH: NA
BOILING POINT C(F): > 20(68)
MELTING POINT C(F): NA
FLASH POINT C(F): < -40(-40) (ASTM D-56)
FLAMMABILITY (solids): NE
AUTO FLAMMABILITY C(F): NE
EXPLOSIVE PROPERTIES: NA
OXIDIZING PROPERTIES: NA
VAPOR PRESSURE-mmHg 20 C: > 200.0
VAPOR DENSITY: 3.0
EVAPORATION RATE: NE
RELATIVE DENSITY, 15/4 C: 0.79
SOLUBILITY IN WATER: Negligible
PARTITION COEFFICIENT: > 1
VISCOSITY AT 40 C, cSt: < 1.0
VISCOSITY AT 100 C, cSt: NA
POUR POINT C(F): NA
FREEZING POINT C(F): NE
VOLATILE ORGANIC COMPOUND: NE
DMSO EXTRACT, IP-346 (WT.%): NA
NA=NOT APPLICABLE NE=NOT ESTABLISHED D=DECOMPOSES

FOR FURTHER TECHNICAL INFORMATION, CONTACT YOUR MARKETING REPRESENTATIVE

10. STABILITY AND REACTIVITY

STABILITY (THERMAL, LIGHT, ETC.): Stable.
CONDITIONS TO AVOID: Heat, sparks, flame and build up of static electricity.
INCOMPATIBILITY (MATERIALS TO AVOID): Halogens, strong acids, alkalies, and oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS: Product does not decompose at ambient temperatures.
HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL DATA

---ACUTE TOXICOLOGY---

ORAL TOXICITY (RATS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.
DERMAL TOXICITY (RABBITS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.
INHALATION TOXICITY (RATS): Practically non-toxic (LC50: greater than 5 mg/l). ---Based on testing of similar products and/or the components.
EYE IRRITATION (RABBITS): Practically non-irritating. (Draize score: greater than 6 but 15 or less). ---Based on testing of similar products and/or the components.
SKIN IRRITATION (RABBITS): Irritant. (Primary Irritation Index: 3 or greater but less than 5). ---Based on testing of similar products and/or the components.
OTHER ACUTE TOXICITY DATA: Inhalation of high concentrations of vapors or aerosols/mists, especially deliberate or abuse exposure, may cause respiratory system irritation and damage. These exposures may also result in central nervous system depression and damage, possibly leading to death. Prolonged skin contact with gasoline may cause severe skin irritation similar to a chemical burn. The above effects, which may result from the whole gasoline or some of the gasoline components, are well documented in the medical literature. HAZARDS OF COMBUSTION PRODUCTS: Exposure to high concentrations of carbon monoxide can cause loss of consciousness, heart damage, brain damage and death.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---

Two dermal studies resulted in significant irritation in rabbits but no significant systemic toxicity. 90-day inhalation exposures (approximately 1500 ppm vapor) in rats and monkeys produced light hydrocarbon nephropathy in male rats, but no other significant systemic toxicity.

---NEUROTOXICOLOGY (SUMMARY)---

Exposure to high concentrations of unleaded gasoline in rodents caused reversible central nervous system depression, however, no persistent neurotoxic effects were observed in subchronic inhalation studies of gasoline blending streams. No neurotoxic effects, as measured by a functional observation battery, motor activity, and neuropathology, were observed in rats exposed to

light alkylate naphtha for 13 weeks at concentrations up to 6600 ppm. The medical literature clearly documents neurotoxic effects in humans from abusive gasoline inhalation (sniffing).

---REPRODUCTIVE TOXICOLOGY (SUMMARY)---

Two separate inhalation teratology studies of unleaded gasoline vapor at exposures up to 1600 ppm and 9000 ppm for 6 hours/day on days 6-20 did not result in any significant developmental effects in rats. No significant effects were observed in the mothers or offspring. A two-generation inhalation reproductive study (CONCAWE) of unleaded gasoline showed no reproductive or developmental effects in rats exposed to concentrations up to 20, 000 mg/m3 (approx. 8000 ppm).

---CHRONIC TOXICOLOGY (SUMMARY)---

A lifetime mouse skin painting study of unleaded gasoline applied at 50 microliters, three times weekly, resulted in some severe skin irritation and changes, but no statistically significant increase in skin cancer or cancer to any other organ. A lifetime inhalation study of vaporized unleaded gasoline at up to 2000 ppm caused liver tumors in female mice and increased kidney tumors in male rats. The kidney tumors resulted from the formation of a compound unique to male rats, and are not considered relevant to humans. The U.S. EPA Risk Assessment Forum concluded that the male rat kidney tumor results are not relevant for human risk assessment. The implications for the female mice liver tumor data for human risk assessment have not been fully determined. Multiple short-term cancer predicative tests (Ames Test, etc.) have routinely been negative (no cancer or mutagenic potential) for unleaded gasoline.

---SENSITIZATION (SUMMARY)---

Unleaded gasoline was not a skin sensitizer in tests in a Buehler Guinea Pig Sensitization Assay.

---OTHER TOXICOLOGY DATA---

Gasoline and Refinery Streams: Isolated constituents of gasoline may display these or other potential hazards in laboratory tests. Gasoline consists of a complex blend of petroleum/processing derived paraffinic, olefinic, naphthenic and aromatic hydrocarbons which include up to 5% benzene (with 1-2 % typical in the U.S.), n-hexane, mixed xylenes, toluene, ethylbenzene and trimethyl benzene. Benzene has also caused damage to the fetus of test animals in developmental studies. Benzene has tested positive (mutagenic) in a number of short-term cancer/mutation predicative tests. Repeated exposures to low levels of benzene (50-500 ppm) have been reported to result in blood abnormalities including anemia and, in rare cases, leukemia in both animals and humans. Prolonged exposure to n-hexane may result in a condition known as peripheral neuropathy. This is nervous system damage and is characterized by numbness of the extremities and, in extreme cases, paralysis. This product contains ethylbenzene. The International Agency for Research on Cancer (IARC) has evaluated ethylbenzene and classified it as possibly carcinogenic to humans (Group 2B) based on sufficient evidence for carcinogenicity in experimental animals, but inadequate evidence for cancer in exposed humans. Methyl Tertiary Butyl Ether (MTBE) was tested for carcinogenicity, neurotoxicity, chronic,

reproductive, and developmental toxicity. The NOAEL for all end points evaluated in three animal species was 400 ppm or greater. An increase in kidney tumors/damage and liver tumors was observed in animals exposed to high concentrations of MTBE. Some embryo/fetal toxicity and birth defects were observed in the offspring of pregnant mice exposed to maternally toxic doses of MTBE, however the offspring of exposed pregnant rabbits were unaffected. The significance of the animal findings at high exposures are not believed to be directly related to potential human health hazards in the workplace.

---

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE AND EFFECTS:

In the absence of specific environmental data for this product, this assessment is based on information for representative substances.

ECOTOXICITY: Based on test results for similar products, this substance may be toxic to aquatic organisms such as algae and daphnia (EL50/ IrL50 =1-10 mg/L). This substance has also been shown to be toxic to fish (LL50 = 1-10 mg/L).

MOBILITY: Dissolution of the higher molecular weight hydrocarbon components in water will be limited, but losses through sediment adsorption may be significant.

PERSISTENCE AND DEGRADABILITY: The majority of the components in this product are expected to be inherently biodegradable. When released into the environment, some of the constituents of gasoline will volatilize and be photodegraded in the atmosphere. The less volatile, more water-soluble components which are aromatic hydrocarbons will also undergo aqueous photodegradation.

BIOACCUMULATIVE POTENTIAL: Not established.

---

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Product is suitable for burning for fuel value in compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.

RCRA INFORMATION: Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity, or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP).

BENZENE: 2.0000 PCT (TCLP)
FLASH: < -40(-40) C(F)

---

14. TRANSPORT INFORMATION

USA DOT:

SHIPPING NAME:	Gasoline
HAZARD CLASS & DIV:	3
ID NUMBER:	UN1203
ERG NUMBER:	128
PACKING GROUP:	PG II
STCC:	NE
DANGEROUS WHEN WET:	No
POISON:	No
LABEL(s):	Flammable Liquid
PLACARD(s):	Flammable
PRODUCT RQ:	NA
MARPOL III STATUS:	NA

RID/ADR:

HAZARD CLASS:	3
PACKING GROUP:	II
LABEL:	3
DANGER NUMBER:	33
UN NUMBER:	1203
SHIPPING NAME:	Gasoline
REMARKS:	NA

IMO:

HAZARD CLASS & DIV:	3
UN NUMBER:	1203
PACKING GROUP:	PG II
SHIPPING NAME:	Gasoline
LABEL(s):	Flammable Liquid
MARPOL III STATUS:	NA

ICAO/IATA:

HAZARD CLASS & DIV:	3
ID/UN Number:	1203
PACKING GROUP:	PG II
SHIPPING NAME:	Gasoline
SUBSIDIARY RISK:	NA
LABEL(s):	Flammable Liquid

STATIC ACCUMULATOR (50 picosiemens or less): YES

---

15. REGULATORY INFORMATION

US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined to be hazardous.

EU Labeling: Product is dangerous as defined by the European Union Dangerous Substances/Preparations Directives.

Symbol: F+ T N Extremely flammable, Toxic, Dangerous for the environment.

Risk Phrase(s): R12-45-38-65-67-51/53.
Extremely flammable. May cause cancer. Irritating to skin. Harmful: may cause lung damage if swallowed. Vapors may cause drowsiness and dizziness. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrase(s): S16-53-45-2-23-24-29-43-62.
Keep away from sources of ignition - No smoking. Avoid exposure - obtain special instructions before use. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Keep out of the reach of children. Do not breathe vapor. Avoid contact with skin. Do not empty into drains. In case of fire use foam/drypowder/CO2. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Contains: Low Boiling Point Naphtha.

Governmental Inventory Status: All components comply with TSCA, EINECS/ELINCS, AICS, METI, DSL, KOREA, and PHILIPPINES.

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III:
This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312) REPORTABLE HAZARD CATEGORIES:
FIRE CHRONIC ACUTE

This product contains the following SARA (313) Toxic Release Chemicals:

CHEMICAL NAME	CAS NUMBER	CONC.
BENZENE(COMPONENT ANALYSIS)	71-43-2	2%
PSEUDOCUMENE (1,2, 4-TRIMETHYLBENZENE)(COMPONENT ANALYSIS)	95-63-6	3%
ETHYL BENZENE(COMPONENT ANALYSIS)	100-41-4	3%
TOLUENE(COMPONENT ANALYSIS)	108-88-3	6%
N-HEXANE(COMPONENT ANALYSIS)	110-54-3	3%
XYLENES(COMPONENT ANALYSIS)	1330-20-7	10%
METHYL-TERT-BUTYL ETHER(COMPONENT ANALYSIS)	1634-04-4	<16%

The following product ingredients are cited on the lists below:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
GASOLINE		1, 8, 19, 20, 21, 23, 25
ETHYL ALCOHOL (COMPONENT ANALYSIS)	64-17-5	1, 6, 10, 18, 19, 20, 21, 23, 25, 26
BENZENE (COMPONENT ANALYSIS) (2.00%)	71-43-2	1, 2, 4, 6, 9, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26
NAPHTHALENE (COMPONENT ANALYSIS) (0.50%)	91-20-3	16, 22

PSEUDOCUMENE (1,2, 4-TRIMETHYLBENZENE) (COMPONENT ANALYSIS)	95-63-6	1, 20, 24, 25
ETHYL BENZENE (COMPONENT ANALYSIS)	100-41-4	1, 8, 10, 18, 19, 20, 21, 23, 24, 25, 26
TOLUENE (COMPONENT ANALYSIS) (6.00%)	108-88-3	1, 10, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26
N-HEXANE (COMPONENT ANALYSIS)	110-54-3	1, 10, 18, 19, 20, 21, 23, 24, 25, 26
XYLENES (COMPONENT ANALYSIS) (10.00%)	1330-20-7	1, 10, 18, 19, 20, 21, 22, 23, 24, 25, 26
METHYL-TERT-BUTYL ETHER (COMPONENT ANALYSIS)	1634-04-4	1, 21, 24, 25
TRIMETHYL BENZENE (COMPONENT ANALYSIS)	25551-13-7	1, 10, 18, 19, 20, 21, 23, 25, 26

--- REGULATORY LISTS SEARCHED ---

1=ACGIH ALL	6=IARC 1	11=TSCA 4	16=CA P65 CARC	21=LA RTK
2=ACGIH A1	7=IARC 2A	12=TSCA 5a2	17=CA P65 REPRO	22=MI 293
3=ACGIH A2	8=IARC 2B	13=TSCA 5e	18=CA RTK	23=MN RTK
4=NTP CARC	9=OSHA CARC	14=TSCA 6	19=FL RTK	24=NJ RTK
5=NTP SUS	10=OSHA Z	15=TSCA 12b	20=IL RTK	25=PA RTK
				26=RI RTK

Code key: CARC=Carcinogen; SUS=Suspected Carcinogen; REPRO=Reproductive

16. OTHER INFORMATION

USE: UNLEADED MOTOR FUEL

NOTE: PRODUCTS OF EXXON MOBIL CORPORATION AND ITS AFFILIATED COMPANIES ARE NOT FORMULATED TO CONTAIN PCBS.

Health studies have shown that many hydrocarbons pose potential human health risks which may vary from person to person. Information provided on this MSDS reflects intended use. This product should not be used for other applications. In any case, the following advice should be considered:

INJECTION INJURY WARNING: If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

Precautionary Label Text:

CONTAINS GASOLINE, BENZENE, AND ETHYLBENZENE

DANGER!

EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. CAUSES SKIN IRRITATION. RESPIRATORY IRRITATION, HEADACHE, DIZZINESS, NAUSEA, LOSS OF CONSCIOUSNESS, AND IN CASES OF EXTREME EXPOSURE, POSSIBLY DEATH. LOW VISCOSITY MATERIAL-IF SWALLOWED, MAY BE ASPIRATED AND CAN CAUSE SERIOUS OR FATAL LUNG DAMAGE.

OVEREXPOSURE TO BENZENE MAY RESULT IN CANCER, BLOOD DISORDERS, AND DAMAGE TO THE BONE MARROW. LONG-TERM EXPOSURE TO GASOLINE VAPOR HAS CAUSED KIDNEY AND LIVER CANCER IN LABORATORY ANIMIALS, BLOOD EFFECTS, AND NERVOUS SYSTEM DAMAGE.

Keep away from heat, sparks, and flame. Avoid all personal contact. Avoid prolonged breathing of vapor. Use with adequate ventilation. Keep container closed. Approved portable containers must be properly grounded when transferring fuel. For use as a motor fuel only. Misuse of gasoline may cause serious injury or illness. Never siphon by mouth. Not to be used as a solvent or skin cleaning agent.

FIRST AID: In case of contact, wash skin with soap and water. Immediately remove contaminated clothing, including shoes. Destroy or wash clothing before reuse. If swallowed, seek immediate medical attention. Do not induce vomiting. Only induce vomiting at the instruction of a physician.

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm are created by the combustion of this product. Refer to product Material Safety Data Sheet for further safety and health information.

****

For Internal Use Only: MHC: 1* 1* 1* 1* 2*, MPPEC: CF, TRN: 123455-20, CMCS97: EMGF20, REQ: PS+C, SAFE USE: G
EHS Approval Date: 03APR2003

****

Prepared by: ExxonMobil Oil Corporation
Environmental Health and Safety Department, Clinton, USA